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Re-armament and the Railway Equipment Industry

AT the moment when the outlook for British builders of locomotives and other railway material for export was beginning to brighten, the necessity for re-armament has cast a shadow—though it may prove to be only a passing shadow—over this vital part of the British export potential, and this when it is more than ever necessary to offset the great increase in imports shown in the figures for January. The ways in which re-armament could result in reduced production of railway material exports can be classified as three (though they all interact): shortage of raw materials, priority of re-armament orders, and priority of the needs of British Railways in their strategic rôle. The last-named can be dismissed as a remote possibility unless the international situation deteriorated. In locomotives, to take one example, British Railways have more than their requirements, and, with this year's building programme, it would be some time (except in a great emergency) before they would need to have recourse to outside building firms. What the effects will be of re-armament orders on heavy industrial workshop capacity is still an unknown factor. The manpower problem may well be aggravated; it is however unlikely that the Government would interfere except as a last resort in an industry as important to the national economy as that of railway equipment for export. For raw materials, the intentions of the Government, although circumstances later may require a change of policy, are benevolent towards export industries. The President of the Board of Trade last week advised firms likely to be concerned with re-armament to accept orders for dollar areas and the British Commonwealth; at the same time, however,

he advised them to consult with the Government Departments concerned on the question of priorities. Mr. Wilson also stated that the raw material shortage would be not only serious, but also of long duration; but it would be premature to suggest that the export control order of last week, which includes locomotives and some other railway equipment, is more than a precautionary measure. Meanwhile the Treasury, the Ministry of Supply, and the Board of Trade are trying jointly to reconcile the conflicting needs of re-armament and the national economy. As to steel nationalisation, it is to be hoped that this will have no adverse effect on the handling of problems which the industry itself dealt with so efficiently in past emergencies.

Mr. F. A. Pope Joins British Transport Commission

THE appointment of Mr. F. A. Pope, Chairman of the Ulster Transport Authority, to be a full-time Member of the British Transport Commission should do much to strengthen that body in dealing with the many problems which it now has to face. Mr. Pope has had a wider experience of transport than any of the present members of the Commission. As will be seen from the biographical details published elsewhere in this issue, his activities have been by no means confined to the British Isles, although the greater part of his career has been spent in the service of the former London Midland & Scottish Railway or its constituent or controlled undertakings. On the L.M.S.R. itself he became a Vice-President in 1946. His overseas experience includes periods in Nigeria and India. He became the first Chairman of the Ulster Transport Authority, which succeeded the old Northern Ireland Road Transport Board on which he held a similar position. During his period of office with the U.T.A. he has succeeded in effecting a very wide measure of integration between the services provided by the Authority. The size of the problem in Northern Ireland is in no way comparable to that obtaining in Great Britain, but the experience Mr. Pope has gained there, particularly in his relationships with the unions, should be of great value.

Coal Prospects

THE National Coal Board production plan for 1950-65, announced last November, provided for a rise of 18 per cent. in output with, a result of enhanced efficiency and increased mechanisation, a fall of 11 per cent. in manpower over the fifteen years. It is true that output per man has risen since nationalisation in 1946; but manpower, after rising to 724,000 in 1948, was back at the beginning of this year to where it started in 1946, at 697,000, and as mechanisation and improvements generally cannot yet make much difference to output, it is still manpower and the willingness of that manpower to put in maximum hours that will count most for the next few months. Even if the present acute crisis is past at Easter, depleted manpower (for which recent improvements in pay and conditions may well be offset by the attractions of the industries concerned in re-armament), with the already increased consumption and possible further increases caused by re-armament, will result in a chronic coal shortage for some time. The result for the railways (unless the Government attaches greater importance to their passenger traffic) must be continued restriction of services as a coal economy measure. Holiday traffic presumably will necessitate restoration in the summer timetables of some cross-country and main-line trains recently suspended.

Railway Commercial Practice and Problems

MR. David Blec, Member of the Railway Executive for Commercial Matters, has the dual advantage not only of being thoroughly well-versed in all aspects of his work but also fluent in exposition. He is never hesitant in expressing his views or in good humouredly meeting opposition to them. It was largely because of these attributes, coupled with the interesting facets of his subject which he brought forward, that his address to the Southern Region Lecture & Debating Society on February 14 was so valuable.

He showed realism when he emphasised that the provision of a service should precede the traffic. There have been many instances of the wisdom of this policy, especially on the old Southern Railway, where the provision of frequent electric services speedily created a great volume of traffic. Mr. Blee also outlined some of the problems that faced the railways at the present time. The recent increase of 4s. 2d. per ton in the price of coal would increase the railway bill by £3.1 millions a year. Higher price levels for gas, steel and electricity are also having their effect on railway economy. Paper has not only advanced in price, but supplies have become so precarious that difficulty is being experienced in securing the railways' needs for such essential purposes as the printing of tickets.

Staff Costs and Integration

STAFF difficulties arise not only on the grounds of cost but also in insuring the maximum resiliency in the workers available. In some categories of staff there is a numerical shortage which becomes accentuated in times of epidemic sickness. Mr. Blee emphasised the necessity for ensuring that the confidence of the staff was secured at all levels. Some 60 per cent. of the total expenditure of the railways goes in meeting wages bills and the recent wage award, if accepted, may add anything between £7,000,000 and £12,000,000 a year to the labour bill. Mr. Blee also dealt at some length with some of the personal problems which must arise in the pursuit of integration. Many of these are being discussed at the present time. When they were resolved, as he hoped they would be in a few months, he thought there would be large-scale and far-reaching developments. The commercial department of the railways was probably unique in industry in that, not only did it have to sell the services available, but it was also responsible for the price charged for those services, and sometimes had to undertake the responsibility of recommending that it should be increased.

Overseas Railway Traffics

DURING the fortnight ended February 11 there were further increases in traffics of the Antofagasta (Chili) & Bolivia Railway and total receipts for the current six weeks amounted to £583,550, as compared with £410,160 for the equivalent period of 1950. The advance in traffics in the first week of the period under review was £41,630 at £107,850, and during the second week, when there was a three-day holiday on the Bolivian Section in 1951, the improvement amounted to £15,490 at £80,170. Paraguay Central receipts were £158,240 higher at £428,160 in the two weeks ended February 9 and aggregate traffics since July 1, 1950, were up by £1,948,810 at £6,495,598. There were further substantial increases in South African Railways traffics during the fortnight ended January 27 and total receipts for the current 43 weeks were £73,410,130, as compared with £63,743,544 for the equivalent period of 1949-50. The improvement amounted to £292,609 at £1,745,167 in the first week, and a £324,298 advance to £1,840,035 followed.

British Transport Commission Statistics

FOR the last four-weekly period of 1950 the total traffic receipts of the British Transport Commission exceeded those for Period 13 of 1949 by 9 per cent.; of these traffics, British Railways (by far the largest item) were up by 10 per cent., for reasons discussed in previous issues of this journal, and the next largest, road haulage receipts, up by 17 per cent. (largely through acquisition of undertakings) over the previous year. For the whole year 1950, the Commission's total traffic receipts exceeded those of 1949 also by 9 per cent., with British Railways up by over 4 per cent., and, in order of magnitude, road haulage up by 66, London Transport down by 1 per cent., provincial bus up by 8, hotels by 10, docks by 7, ships by 1, and inland water transport up by 7 per cent. Given the great preponderance of British Railways revenue, of which two-thirds

is derived from freight, and the rapid growth of the Road Haulage Executive's activities, it is clear that the increase in railway freight rates in May, 1950, and B.T.C. acquisition of road haulage undertakings were the main causes of increased revenue in 1950.

Area Holiday Guides

EACH of the five holiday guides for 1951 published by British Railways covers, as last year, a tract of territory which can be only very roughly co-terminous with a Region of British Railways. Thus Area No. 2, described as "Wales & North West England," which covers basically London Midland Region territory, embraces, besides South Wales, much territory in the West and South Midlands which is properly Western Region, especially since the Regional boundary changes of 1950. Apart moreover from some useful maps in the guide for Area No. 5 (South & South East), which give, *inter alia*, associated bus routes, the method of showing railways in the maps might perhaps be considered inconsistent in the indication of main and branch lines—as was pointed out in our issue of February 24, 1950. Britain cannot, however, easily be divided into units greater than its counties, and such discrepancies are inevitable after the upheaval of nationalisation. A mass of information invaluable to the prospective holidaymaker and many skilfully selected and reproduced photographs are offered for one shilling, which is a small price to pay for such value.

Unloading Exported Locomotives

FOR reasons of economy and speed, the practice of shipping overseas complete locomotives has become increasingly popular in recent years. Where adequate unloading equipment is not available at destination ports, the chartering of one or more of the seven vessels forming the fleet of the Belships Company—all capable of unshipping locomotives weighing up to 200 tons with their own lifting gear—has generally proved satisfactory and economical. Three of the Belships are of 10,000 tons d.w., two of them 15-knot twin-screw steamers, and the capacities of the seven vessels vary from 47 to 18 locomotives. It sometimes happens, however, when rapid delivery is essential, and when a regular flow of small consignments at frequent intervals is preferred, that locomotives are exported as deck cargo on liners as they are received from the builders. Some liners, such as certain vessels of the Clan Line, can lift modern main-line engines with their own gear and can each carry nine or ten. In other cases, when the order is sufficiently large to warrant it, consignment is by ordinary liners carrying up to about six engines on deck, and unloading equipment is specially installed at the destination port for unshipping them.

Rapid Building of a 100-ton Gantry

A CURRENT example of such a combination of circumstances is the shipping of 120 heavy locomotives—ordered from the North British Locomotive Co. Ltd., by the Victorian Government Railways—and the provision of a special gantry at Melbourne for unloading them, described elsewhere in this issue. The cost of building, shipping and installing this gantry was covered by the freight charges on so large a consignment. In this instance speed in delivery of the gantry was also a deciding factor, and detailed working drawings of the structure and its mechanical and electrical equipment were prepared by the consulting engineers within about a month. To reduce to a minimum the time required for fabrication, the wartime expediency of placing orders with different firms for the supply of the various parts was resorted to. As a result, three principal contractors completed the gantry within three months, by which time it was erected and ready for testing. It has now been in service since July last, unloading, as they arrive in regular liners, four or six locomotives the majority of them weighing 97½ tons without their tenders.

Railways in North Africa

ASTONISHING contrasts would be the description—in a phrase—of the North African railways of today—long lines of steam locomotives rusting away, large new diesels in fine condition, well appointed depots, four classes of accommodation in one country and four gauges in another, relics of many lines closed in recent years and new construction proceeding, passengers who might have come out of the ark travelling in vehicles that look as if they had just come out of a modern plastic surgery, and almost exemplary punctuality in a land where time generally is of no more consequence than in Tibet. Much of the excellence of the main-line tracks is due to the wartime needs of British and American armies; where there were none, the condition of the system continues to be mediocre. But there is one outstanding policy in all three countries and on five out of the six big systems in French North Africa, and that is the elimination of the steam locomotive.

Railway Wages

IF fairness, clarity, and reasonableness are the criteria of a court of inquiry report, the report published last week, of the court presided over by Mr. C. W. Guillebaud and set up by the Minister of Labour to inquire into the applications for wage increases of the three railway unions, is a model of its kind. Its conclusions and recommendations are given in some detail elsewhere in this issue, and whatever the outcome of the discussions (including a new offer by the Railway Executive) in progress at the time of going to press with this issue, the suggestions are a reasonable solution of the problem within the limits set by the present financial situation and structure of British Railways.

To adjudge wage claims not only as between three conflicting unions but also with regard to the principles of a reasonable minimum in relation to price levels, of relativity as between railway and non-railway employment, and of differentials between different grades within the railway industry, was a formidable task. The court established the fact, surprising to many, that the average weekly earnings of conciliation staff are (or recently were) only 10s. below those in a wide range of other industries, but goes on to enumerate factors which detract from the value of such comparisons. It is also surprising to find, after so much said as to the quick turnover of labour on the railways, that the annual rate of turnover for railway conciliation staff is only half that for manufacturing industries in general. As regards the cost of living, timely reference is made to the effect of wage increases both on the price of articles into the production cost of which the wages enter, and on the prices of a limited amount of consumer goods competed for by an increased number of consumers with more to spend.

The crux of the report is in the capacity of the railways to pay higher wages. The court reviews their financial situation, and in making its recommendation as to wage increases (which is basically the same as the Railway Executive offer) draws attention to the dependence of these increases on making good the additional cost incurred; they are, in the words of the report "in the nature of an advance or mortgage on economies to be effected in the future." The court, however, was bound to make recommendations within the limits of the present financial structure of the railways. Thus it is assumed that British Railways' share of the Central Charges, that is (mostly) the interest on 3 per cent. Transport Stock, will continue to be a statutory obligation. No other assumption indeed is possible on any sound financial basis, but this obligation has been criticised by extreme partisans as an intolerable burden, and an obstacle to higher wages. The problem of railway rates is discussed only briefly, without reference to the effects of complete integration of transport in this country. The latter, if and when it takes place, is the only practicable means of enabling the railways (which would then cease to subsidise, as they are doing, many industries by their present low rates)

to charge enough to cover increased outgoings. Without however entering on the pros and cons of integration, it is enough to say that it is sufficiently remote to have little bearing on the immediate problem of railway wage rates. As regards the present, the court believes that the wage increases which it recommends are the maximum "within the capacity of British Railways to pay, without imposing intolerable burdens on them," and with that there can surely be no disagreement.

The various arguments for wasteful and obsolete practices in utilisation of manpower are conclusively demolished by the report, which also makes some constructive suggestions on the avoidance of dismissals resulting from redundancy. It emphasises the degree of agreement with the unions on matters such as lodging-turns and vanguards in the London area; indeed, the only point of marked disagreement with a union seems to have been knocking-up, and then only because of the unwillingness of a minority. "It may be asked," states the report, "why... there should nevertheless have occurred a complete breakdown in the negotiations... resulting in a deadlock which has necessitated our appointment as a Court of Inquiry." The causes named, besides inter-union rivalry and lack of co-ordination, include "the precise form and timing of the Railway Executive's counter offer and other proposals in the final stages of the negotiations." The last allusion is to the attachment by the Executive of conditions to its wage offer. Having regard to the reasonable attitude of the unions in other matters, it is hard to agree with the report here; the outburst of the N.U.R. Secretary, Mr. J. B. Figgins, on the announcement of the Executive's conditions was quite unjustified, nor, in view of the previous protracted and fruitless negotiations, was the Railway Executive offer ill-timed in its attempt to settle matters once and for all.

One of the court's recommendations is a working agreement between the railway unions, besides a hint as to more general co-operation. The latter, after a bad start in the unions' several reactions to the report, seems to have been taken to heart when this issue went to press, when, despite the unofficial stoppages, a peaceful settlement appeared to be in sight.

The U.S.A. Railways in 1950

THE annual review and outlook issue of our American contemporary, *Railway Age*, was published on January 15. Its main feature is a masterly survey of railway operations in 1950, by Dr. J. H. Parmelee, Vice-President & Director, Bureau of Railway Economics, Association of American Railroads. With the aid of statistical tables and diagrams he shows that 1950 started badly with a decrease in the first quarter of 8 per cent. in ton-miles and 18 per cent. in passenger-miles. Largely due to the international situation, freight traffic quickly recovered until, by the end of the year, ton-miles were up 11 per cent. on 1949. Passenger traffic declined to the close of September, when the effects of the Korean war and defence plans gave it an upward trend, but for the whole year passenger-miles fell 9 per cent. below the 1949 level.

Freight revenue increased at much the same rate as ton-mileage, while passenger revenue, in spite of increased fares in the East, decreased by 7.5 per cent. in the first ten months. Operating expenses were fairly steady, with the result that the ten months operation ratio was 75 per cent., as compared with 81 per cent. for the same period of 1949. Revenue per ton-mile averaged 1.33 cents during the first eight months of 1950, slightly below the 1949 average. That was due largely to heavier movements of coal at low rates. At nearly 2.55 cents, average revenue per passenger-mile was higher than in any year since 1930. The rate of return on property investment may be 4 per cent. for the calendar year—an improvement on 1949, but a modest return.

The American average train load of 1,199 net tons was a record, being 61 tons, or over 5 per cent., heavier than in 1949. That additional weight represented roughly

one-third of the British Railways train load. The American freight train travelled at 17 m.p.h., the highest average speed ever recorded. So was the average speed of 37.4 m.p.h. recorded for passenger trains. Both freight and passenger trains in the United States ran twice as fast as our trains. Obviously, there was little wrong with railway operating across the Atlantic last year, in spite of a series of labour disputes which culminated in the Government taking control of the railways on August 27. Annual earnings of railway employees averaged \$3,764 in 1950 and have almost doubled in the last ten years. There seems to be no end to their demands for more pay and shorter hours. The railways decided in January to seek authority to increase freight rates by 6 per cent. to cover the mounting cost of wages and the rising prices of materials. Prices rose to high levels during 1950 and give every indication of increasing further. The eleven-year rise from 1939 to 1950 was 103.5 per cent. for materials other than fuel and 122.4 per cent. for fuel.

Capital expenditures are estimated to have amounted to \$1,065 million in 1950. Equipment accounted for \$787 million of the total and in addition 19,000 freight wagons costing \$102 million and 207 diesel-electric locomotives costing \$30 million are being leased on a monthly rental basis. These expenditures should make for increased operating efficiency in 1951 and prevent serious shortages of wagons, such as occurred last year.

Dr. Parmelee states that an outstanding event of 1950 was the investigation of land and water transport by the Senate Committee on Interstate Foreign Commerce. In his opinion, "no more thorough survey of the position of the railroads in the national economy has ever been made, nor have the railroads previously submitted so comprehensive a statement of their competitive difficulties, their regulating handicaps, and their traffic and financial trends and prospects." A correspondent summarised the evidence tendered by the railways in a series of eight articles which appeared in *The Railway Gazette* between June 9 and December 8 last year. We share the hopes expressed by Dr. Parmelee that the Senate Committee will issue a report which will help to solve the many problems described by the railways in painstaking detail.

Early Electric Locomotives

SIMULTANEOUS development in several countries by builders with individual ideas made the early history of electric traction more complex than that of the steam locomotive. In a valuable summary of events to the early years of this century, which was presented recently to the Newcomen Society in London by Mr. F. J. G. Haut,* the convergence of all these experiments was followed into the main streams of present progress. The author recounted the pioneer trials with d.c. motors, hopes entertained for three-phase traction and their subsequent partial eclipse, the coming of the single-phase commutator motor, and the present predominance of the d.c. and single-phase a.c. systems. He alluded, also to recent trials of single-phase traction with 50-cycle current, and to their possible effect on future electric traction development. His paper deserves to be studied by all who wish for a concise review of the significant events in the history of the electric locomotive.

Certain historical features recalled by the paper are of special interest in the light of subsequent happenings. For example, the first design for a single-phase locomotive in the Seebach-Wettingen trials of 1901-1905 made use of the converter (a.c. to d.c.) principle, although it was later adapted to take a.c. traction motors. Today converter locomotives running on lines with a high-tension single-phase supply are again of importance. Only recently the first of four twin-unit machines of 6,800 h.p. went into service on the Virginian Railroad, U.S.A., where previously split-phase (single-phase to three-phase) locomotives had been used. Converter locomotives have long

been operating on the Cascade Tunnel section of the Great Northern Railway, and it remains to be seen whether this system will be adopted to enable 50-cycle supplies to be used for traction, although possibly with rectifiers instead of rotary machines for conversion.

It is interesting to read that braking by using the traction motor as a generator is reported to have been used in Thury's d.c. rack locomotive of 1884. The automatic regenerating characteristic of the motors was one of the factors which encouraged the early development of three-phase traction, but drawbacks have been found in practice on the Italian lines, where three-phase supply was adopted with regenerative braking particularly in view. At the I.E.E. Electric Railway Traction Convention in London last year, Professor Semenza, Italian State Railways, spoke of difficulties experienced on the lines serving Genoa Harbour. If regeneration was interrupted by a control circuit failure on a locomotive hauling a goods train the whole responsibility for retarding the train might be thrown on the locomotive air brake alone. It was considered, therefore, that braking by regeneration on down grades was risky, unless an alternative form of brake was available throughout the train, as on passenger stock. Another disadvantage was that the speed of descent, being related to the supply frequency, was less than would be possible with a steam-hauled train. For these reasons, Professor Semenza reported, reliance on automatic regeneration for braking had been almost abandoned.

Most readers of Mr. Haut's paper will echo the plea for more details to be unearthed of R. Davidson's battery locomotive of 1842, in which iron bars attached to a wooden cylinder on each axle were attracted by an electro-magnet system, switched on and off at the appropriate moments to provide continuous rotation. In those days any alternative to steam motive power was likely to be viewed with suspicion. More recently, there has been less co-operation than is desirable between builders of mechanical and electrical parts, but Mr. Haut rightly drew attention to the much closer understanding that now exists between the two. Some electrical engineers have no difficulty in expressing their views on bogie design or cab layout to their mechanical collaborators. Receptiveness on both sides to the ideas of the other may avoid costly mistakes that do not come to light until some time after the equipment is in service.

Atom Bomb Defence on American Railways

ACCORDING to our American contemporary, *Railway Age*, the United States railways are perfecting their civil defence organisations to meet the threat of atom bombing. In Chicago, where the metropolitan area covers 2,700 sq. miles and is served by 33 railway systems, the railways have been divided into five zones, each with its own local organisation. It is considered that structures and equipment within a three-mile radius of each bomb site will be beyond repair, and as well as the normal headquarters there will be two other alternative headquarters in each zone.

If a bombing alert is received, a predetermined signal will be flashed by loudspeaker and teletypewriter to all concerned, including signalmen, who will relay it to ground yard staff. All incoming trains will be stopped at the area boundary and those within it will be halted at the first station or other opportunity. Signals will then be cleared to allow of evacuation to selected dispersal zones of all possible rail equipment and personnel from the "down-town district," the most likely target for attack.

As soon as bombed areas can be identified, other areas will be cleared for rerouting traffic round the devastated localities. Staff living within three miles of their places of work will walk there—to relieve street traffic congestion—and report for duty at once. Engineering staff will do their utmost to inspect and restore track, bridges, and buildings, and clear essential routes. Passenger stock will evacuate injured and sick, but goods vehicles will also be used if necessary. Tank wagons will be drained and cleaned to be available to carry water for fire-fighting and drinking.

* "The Early History of the Electric Locomotive," by F. J. G. Haut. A paper read to the Newcomen Society at the Science Museum, London, on January 10.

Slightly Staggered Rail Joints

"SLIGHTLY Staggered Rail Joints" is the title of an interesting brochure reviewed in this issue. It opens for discussion the whole question of staggered as opposed to square joints in straight track, and the pros and cons of the short-pitch stagger in particular. At the outset it may be well to remind readers that this problem is quite different from that of the half-rail-length stagger of joints on curves, which primarily is used to secure a more uniform and permanent alignment of the track, and not necessarily to improve its cross level, the main object of the short-pitch stagger in straight track. Recent reports to the International Railway Congress Association indicate that in European countries, their dominions and colonies, square joints are almost invariably preferred to staggered in straight track. On the other hand, most railways in America have adopted staggered joints, so that the verdict is by no means unanimous.

The brochure opens by stating that the staggering of rail joints is logical because (a) it avoids placing two weak spots, the joints, in the track directly opposite each other, (b) it reduces the impact at the joints to that corresponding to a wheel load instead of an axle-load, as in the case of square joints, and (c) it produces a more uniform vertical continuity of the track. At the same time, stagger with a pitch equal to half the length of the rail has been found to set up undesirable and uncomfortable rolling motion in locomotives and rolling stock, owing to the regular periodicity of the roll on either side, particularly when it synchronises with the period of vibration of the springs. On the other hand, it is claimed that a short stagger produces only a slight cork-screw wriggle, much less objectionable than the roll with half-rail stagger.

For these reasons, certain railways in India decided to experiment with short pitch staggered joints about a decade ago, and in 1940 the North Western administration, in its first report, commented favourably on the results obtained with track laid with new wooden sleepers. Three years later, however, graphs obtained with the Hallade track recorder showed that the running over the slightly-staggered road was inferior to that over normal square-joint track. In reporting this conclusion to the Indian Railway Conference Association, the Chief Engineer wrote: "The staggering of rail joints involves a bunching of the sleepers under the joints and, consequently, wider spacing of sleepers in the centres of the rails as compared with the spacings with square joints. Such bunching and non-uniform spacing of sleepers means a varying elastic modulus of the track. Moreover, at the joints the spacing of the sleepers between the joints leads to greater support of the rail on one side of a joint as compared with the support on the other side. On account of the bunching of the sleepers at the joints and the wider spacing of the sleepers in the centres of the rails, there is constant trouble from low centres of the rails. This leads to uncomfortable running in addition to the rolling motion of the joints. It is felt that this will get worse as time goes on.

To meet these valid objections made by the North Western administration, and in order "to produce the accepted efficient rail joint support for square joints, but without any bunching of sleepers under the continuous rail opposite the joint, and without too wide a spacing of the intermediate sleepers, i.e., a uniformly elastic track structure cum-slightly staggered joints", the Great Indian Peninsula Railway engineers produced the following ingenious solution of the problem, in so far as it applied to track embodying cast-iron plate sleepers with steel tie-rods. To provide what is generally considered to be the most efficient form of support for the rail joint, two standard sleeper-plates were laid at 1 ft. 2 in. centres under the staggered joint. Their tie-rods, however, instead of connecting them in the normal manner with other plates opposite under the continuous rail, were bent and cut to form a mid-track riveted joint with the tie-rod of a single similar plate under that rail and exactly opposite

the staggered joint. A simple bifurcated or Y-shaped tie-rod was thus used, which could be fabricated even in a small workshop. In this way the uniform sleeper spacing under the continuous rail was retained without any bunching opposite the joint, and a uniformly elastic modulus of track support was secured. It is stated, however, that difficulty was experienced on the G.I.P.R. in packing the plates of this type of sleeper because they were so closely spaced under the joint, and that therefore the spacing was subsequently increased from 1 ft. 2 in. to 1 ft. 6 in. This alteration would seem to be detrimental to the joint, and we understand that a 1 ft. 3 in. joint sleeper spacing for cast-iron plates has been found to be quite satisfactory.

As an alternative to the two standard-type plates under the joint, a duplex plate may be used with a specially-slotted normal tie-bar connecting it to the standard plate opposite. The joint support thus provided would normally be less suitable, as it is rigid and would induce rail batter and a high concentration of stress at the rail seat. A modified form of duplex sleeper has therefore been produced with a wooden pad and a wide rail seating to absorb some of the impact effect and reduce the concentration of stress method.

This is said to have given promising results in the electrified area of the G.I.P.R. under dense traffic at speeds up to 65 m.p.h. It is suggested that in a road laid with trough type steel sleepers, half a trough sleeper may be laid under the continuous rail and be connected to a duplex plate under the joint by the tie-rod of the latter cut to about half length. This appears to us an unsatisfactory arrangement, considerably reducing the stiffness of the sleeper as a whole. A form of composite wooden sleeper with additional bearing surface under the staggered joint is also being tried in wooden-sleeper track on the G.I.P.R. It consists of a normal sleeper with two sleeper cut pieces bolted under and transversely to it, one inside the rails at the joint, and the other outside. This seems to us to have two defects, packing has to be done at two levels, suggesting looseness of ballast under the rail, and, as the joint is directly supported, rail batter is to be expected. It seems probable, therefore, that some better composite timber sleeper may be evolved to carry short-staggered joints in wooden-sleeper roads. The arrangement of three standard cast-iron plates connected by a bifurcated tie-rod certainly seems to be the most satisfactory solution apart from the necessity of its 18-in. spacing under the joint, but it is unfortunate that it is applicable only to its particular type of track.

We hope this form of staggered-joint track is being or will be given a comprehensive trial on other Indian railways, and look forward to reports from them on its behaviour from the running, maintenance, and financial points of view. Meanwhile, with their already considerable experience of it, the G.I.P.R. engineers would be doing a service to other railway engineers if they would publish comparable Hallade records of similar track laid with staggered and square joints, together with notes on comparative costs of installation and maintenance, and of their experience generally of short-stagger joints laid with (a) standard cast-iron plates and bifurcated tie-rods, (b) duplex plates with both cast-iron plate and half-trough sleepers under the continuous rail, and (c) composite wooden sleepers.

The other main point raised in the brochure is the selection of the optimum pitch for the stagger. It appears that the G.I.P.R. engineers have arrived at—it is not quite clear how—half the length of the wheelbase of the standard type of bogie fitted to passenger stock as being, in principle, the optimum stagger. For 5 ft. 6 in. gauge track the figure is 5 ft., as 10 ft. is the standard passenger bogie wheelbase. This complies with the condition that the stagger must be less than the minimum wheelbase of any bogie allowed to run over the line, namely, 6 ft. Mr. Saldanha, Chief Engineer of the G.I.P.R., who is the author of the brochure, is to be congratulated on his and his officers' initiative and investigations concerning this slightly-staggered joint problem as a whole.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Accidents at Level Crossings

February 11

SIR,—In your February 9 issue you have printed a letter from Mr. Courtenay Barry on level crossing accidents. On the subject of electrical release for the gates of unattended crossings, would Mr. Barry let us know how he would deal with the problem of crossing gates that had been either left open, propped open, or improperly closed by members of the public, allowing animals to stray on the line, and delay trains?

Yours faithfully,

D. J. WORRALL

27, Nether Edge Road, Sheffield 7

Cheap Fare Facilities

February 11

SIR,—Your correspondent, Mr. I. S. Forbes, writing in your February 9 issue, did much to point out the variation in cheap fare facilities in different parts of the country. Visitors to Bristol have been amazed to find fares available for most of the day from Bristol to Clevedon, Weston, Bath, Frome, at rates of under a 1d. a mile and on a par with the bus services. These facilities exist in an even more extensive form in the Cardiff area where tickets at similar rates are available, not only to centres likely to draw crowds—such as Barry and Penarth—but to numerous roadside stations on the main line and in the valleys. It seems a great opportunity missed not to offer similar facilities on the extensive Southern Electric service.

It is true that all the newspaper propaganda about high railway fares makes it hard for the public to believe these facilities exist. I have seen people who, despairing of waiting in the queue for the Bristol-Bath bus, have resorted to the railway and have expressed amazement when the booking clerk has handed them 8s. 6d. change out of a 10s. note. The cheap fare, extensively advertised, is the only way to keep passengers off the road.

Yours truly,

J. F. BURRELL

80, Longmead Avenue, Bristol, 7

Railway Efficiency

January 30

SIR,—Anyone acquainted with railway matters before the 1914 war, will recall that the claim was often made that they were carrying 1,800,000,000 passengers a year. I did not say, as Mr. Laundry alleges, that they were "originating" passengers. He claims that, in 1913, these reached a total of 1,331,000,000.

As railway statistics have so often been chopped and changed about—presumably to hide wrong previous theories—it is almost impossible to make straight comparisons. Many years ago I attempted to make comparisons with the pre-1914 figures, by consulting several reference books, but as none of their "official" figures could be reconciled, I had to abandon it!

In referring to the 900 per cent. increase in daily passengers on a Sunderland branch through reducing fares to bus levels, Mr. Laundry claims that if all other ordinary fares were similarly reduced, the railways would lose money. How does he account for their claim to be making money by running excursions at much lower fares, although they involve heavy additional expense? This is hardly the attitude of mind one would expect from a responsible accountant. Old stationmasters have told me that many of these excursions are running less than half full; consequently, receipts do not even cover the cost of advertising them in numerous papers. The accountants only look at one side of the coin—receipts—and take no notice of the other—expenditure.

Through adopting this "system," which does not find

acceptance in any other country, the old relationship between ordinary and excursion passengers turned upside down, as under:—

Passengers	1923	1929 (millions)	1938
Ordinary	415	205	74
Excursion	123	435	493
Season	456	403	369
Workmen	238	237	222
	1,232	1,280	1,158

Receipts declined by nearly £6,000,000, and 100,000,000 more train-miles (excursions) were run to carry even a smaller total number of passengers! Great unnecessary expenditure was also incurred in advertising, handbills, special service timetables, and so on—all of which would have been avoided by reducing ordinary fares to motor-coach level—about 1d. a mile single and 1½d. return.

So, while the railways still continue to lose money in passenger and miscellaneous receipts by retaining high ordinary fares, motor transport receipts are always increasing by charging low ordinary fares!

Yours faithfully,

E. R. B. ROBERTS

Eynesbury, St. Neots

Delayed Goods

February 8

SIR,—In his letter in your February 2 issue, Mr. Courtenay Barry, must have been thinking of the total weight of the train—locomotive, brake van, wagons and load—when he wrote "the average (load) is somewhere between 500 and 1,600 tons, varying according to the class of traffic." The average freight train load (merchandise, minerals and coal combined) for 1949 was 156 tons—see page 364 of the British Transport Commission Report—compared with 125 tons in 1938. This seemingly low figure is accounted for by the enormous number of small consignments of general merchandise, many of them bulky in relation to weight, dealt with by British Railways.

In 1938 one of the companies loaded 50,000,000 consignments at its stations as distinct from private sidings, the average weight being 4 cwt. per consignment. For this reason, it is not possible for even the small 10-ton wagons—sometimes described as "toys"—to be anything like fully loaded; the average wagon load at starting point in 1949 is, for merchandise, just under 4 tons, as against 10½ tons for minerals and just over 11 tons for coal—as may be seen from page 376 of the British Transport Commission Report.

Yours faithfully,

J. M. LAUNDY

Rustington, Sussex

Freedom of Speech

January 18

SIR,—If Dr. Ransome-Wallis, in your issue of January 5, is inferring that employees of the Railway and Hotels Executives are afraid to speak their minds in casual conversation with strangers because of their fear of some retribution from above, his allegations are scarcely borne out by the facts.

If the Railway Executive, for instance, is afraid of what its employees will say if allowed to express themselves freely, why does it encourage activities such as those of Mr. John Elliot, Chief Regional Officer of the London Midland Region, who has recently been holding informal discussions at which he and his chief officers invite questions and complaints of any kind from the staff? If the Executive's servants generally feel as those to whom Dr. Ransome-Wallis has spoken, why have these discussions been so popular and valuable to both sides that their use is being extended?

It is an avowed part of the Government's policy to encourage joint consultation in industry in general and in the nationalised industries in particular. The above is only one of many examples which could be quoted of the practical application of that policy. This can hardly be termed "bureaucracy."

It is perhaps worth quoting here the observation of an editor of one of America's chief railway magazines, after travelling all over British Railways in a 24-day tour: "(The British railway system) . . . is the finest, fastest and promptest in the world. And not the slightest sign of the bureaucracy I expected to see in a nationalised concern."

There is no doubt that the nationalised industries in general and the Railway Executive in particular can, and do, benefit much from constructive criticism, but sweeping and prejudiced generalisations can only result in a false impression being created in the minds of the uninformed.

Yours faithfully

ALISTAIR N. MCKILLOP

28, Curzon Avenue, Stanmore

[The words quoted by our correspondent were in letters written to his journal by Mr. W. H. Schmidt, Transportation Editor of *Railway Age*, while on a visit to this country. Extracts from Mr. Schmidt's letters were given in our September 2 and October 14, 1949, issues. Since our correspondent's letter was written, Mr. John Elliot has become Chairman of the Railway Executive.—Ed., R.G.]

Southern Region Pacifics

February 6

SIR,—Although with no intention of entering into acrimonious argument about the "spam cans," as these engines are derisively known among the Southern engine-men, I cannot let the letter in your February 2 issue pass without comment.

In the opinion of many people, Mr. Bulleid was unduly optimistic in his statements made in the paper referred to, and the claims have not been borne out in practice. For example, a broken chain recently examined showed wear of nearly $\frac{1}{8}$ in. on many of the pins, and the outside of it was bright, as though it had sagged sufficiently to rub on the sump. How can an engine be expected to keep regular beats in that condition? I heard of one of these engines so bad that when the driver notched up, three of the beats disappeared altogether. The effect of three beats and three "nothings" per revolution was really extremely ludicrous.

Yours faithfully,

L. LAWRENCE

121, Grange Road, Purley Oaks

French High-Speed Running

February 6

SIR,—I was interested in Mr. C. H. Lott's comments in your issue of January 19, in which he referred to Baron Vuillet's letter in your issue of January 5.

Although only one day and one night train in each direction between Paris and Nice carry passengers of all three classes, it is not correct to assume that the "Train Bleu," "Paris-Côte d'Azur Rapide," and "Le Mistral" carry only a small proportion of the total traffic. "Le Mistral" is a light train, normally loading to about 330 tons south of Dijon, but the "Train Bleu" and "Paris-Côte d'Azur Rapide" normally load to between 620 and 720 tons.

French second class travel represents a much larger proportion of the total passenger receipts than first class travel in Britain, which amounts to less than 10 per cent. of total receipts. The French second class fare of about 2-1d. per mile is only 31 per cent. higher than the third class rate and not much more than the British third class monthly return rate of 1-65d. per mile.

The average speeds of most French long-distance trains which admit passengers of all three classes are much the same as these here, although the loading of the French trains is generally much heavier. Despite heavy loads,

the French trains maintain an exemplary standard of punctuality. The regularity with which lost time is recovered in France, encouraged by a bonus system and safeguarded against reckless running by the provision of efficient recording speedometers, would merit serious study in this country.

On nine main line journeys made here in January, averaging 114 miles in length, I did not once arrive at my destination at the scheduled time. The total lateness on these journeys, none seriously affected by bad weather, was 117 min., or an average of 13 min. per journey; the worst was a 53 min. late arrival at Bradford with the 6 p.m. from Kings Cross on January 14. The experiences of other regular travellers over the former Great Northern and Midland main lines from the West Riding confirm that the poor punctuality on my own recent journeys is no worse than average.

A broader comparison of running over the former Great Northern and P.L.M. main lines would be made by comparing the average time of all express trains between Kings Cross and Edinburgh with that of all express trains from Paris to Valence, a comparable distance. Between Kings Cross and Edinburgh, 393 miles, nine down and eight up trains average 8 hr. 18 min. for the journey, the average overall speed being 47.3 m.p.h. Between Paris and Valence, 382 miles, eight trains in each direction average 7 hr. 32 min., 50 m.p.h. exactly. The French trains are electrically-operated between Paris and Dijon, 195 miles, but the schedules between Dijon and Lyons include a special time recovery allowance of about 15 min. per train to allow for out of course delays resulting from the electrification works which are now being carried out on this section.

Yours faithfully,

GEORGE W. CARPENTER

6, Oak Villas, Manningham, Bradford

The Milwaukee Centenary

February 1

SIR,—It is gratifying that despite restrictions on space your issue of January 26 included an editorial on the centenary of a great American railway. The December, 1950, issue of the Milwaukee Road staff magazine draws attention to the satisfactory financial strength built up by the railway, thanks to very efficient management, since it emerged from trusteeship some five years ago. It is claimed that at the beginning of 1951 the condition of the property was better than it has ever been, with deferred maintenance substantially overcome. The changeover to diesel-electric power has been carried out as fast as the financial position made possible. It was a pioneer in straight electric traction, but it may be that the more mobile diesel-electric will in due time replace electric as well as steam traction.

Your editorial surprisingly states that the Chicago, Milwaukee, St. Paul & Pacific, "has no coal mines on or near its system." Its own official history, kindly sent me by Mr. C. H. Buford, President until recently, contains the following paragraph. "President Harry Byram has negotiated a 999-year lease of the Chicago, Terre Haute & South Eastern Railway Company which gives the St. Paul Road direct access to coalfields in Southern Indiana." That was on September 13, 1920, and in fact the Milwaukee originates a considerable coal tonnage.

More important, however, is the Milwaukee staff and its splendid morale. For a financially weak line to inaugurate the "Hiawatha," which for some time held the passenger-train speed record of the world, daily exceeding speeds of 100 m.p.h., was an example of fine courage which earned its due financial reward. Despite light rails and gravel ballast on certain sections, the running both in the cab and in the coaches was superbly smooth. Such is the spirit which is engendered by recent Milwaukee Presidents, Mr. H. A. Scandrett and Mr. C. H. Buford, and now by Mr. J. P. Kiley, all of whom are railwaymen of many years' experience.

Yours faithfully,

C. E. R. SHERRINGTON

20, Queens Road, Belmont

THE SCRAP HEAP

Old Crane-Engine Withdrawn

After 93 years of service London Midland Region 0-4-2 saddle-tank locomotive No. 58865 has made the journey from London to Derby for breaking-up. The locomotive, which is thought to have been the oldest at work in Great Britain, was built as an 0-4-0 tank by Sharp, Stewart & Company in 1858 for the North & South Western Junction Railway, and at one time worked on the Hammersmith and Chiswick branch from South Acton. After being taken over by the North London Railway, it was rebuilt as an 0-4-2, and, since receiving a crane in 1872, has been used at Bow Works as a service engine.

Terminal-ology

Unkind remarks are often made by foreigners and, to their shame, by traitorous Londoners about the railway stations of the capital. . . . Unfeeling comparisons drawn by critics between such period pieces as Liverpool Street and the greater beauties and amenities of American and Continental termini are hard to upset by reasoned argument. . . .

Liverpool Street itself may have its lovers. Victoria has many, and the news that some modernising has been going on there may frighten loyalists to tradition. If so, they need not worry, for one booking hall does not make a station. Victoria retains, as others do, in their diverse ways, its long established and unmistakable individuality.

. . . To set foot on Paddington is to be carried instantly, for anyone in the slightest susceptible to atmosphere, half-way to Devon. Broad vowels are to be heard more than Cockney ones. Every other passenger is a sailor, and the guards and collectors, loyal servants of the nationalised octopus though they surely are, remain, nevertheless, pure G.W.R. types. . . . A southerner, hearing bagpipes at Kings Cross at any time

of the day or night, would think it as natural as in a Highland glen. If he heard them at Euston, he would suppose that they were in honour of a football match.

Waterloo, for many Londoners, is the station that has most completely buried its past; the utter confusion which, in retrospect, had a charm of its own, vanished with the various rebuildings. . . .

The older stagers have a breathtaking assurance that they bring with them from the self-confident era of their birth, in which admiring critics declared that the fine Doric portico at Euston reminded them of the propylae of the ancient Greek cities. A less classical generation admires the old dears for their own sakes.—*From "The Times."*

Appreciation

Holborn is one of the busiest underground stations, but every evening at 5.15 p.m., when the rush is about to begin, two or three of the staff stop one of the four escalators and escort a blind lady and her dog to her train. This action is without doubt over and above the line of duty, and many travellers who witness this courteous deed must feel a great deal of pride in our public servants.—*From a letter to "The Evening News."*

Bletchley Station

. . . A railway journey from Oxford to Cambridge need not involve a long wait at Bletchley. A through train (no corridor) leaves at a reasonable hour in the morning. It stops at Bletchley; it can hardly be said to wait there. So people frequently get left behind, and, because they feel foolish, they hate Bletchley Station, and go whining to journalists about it. This bad reputation is a myth to soothe vanity and absorb spite. It is useful, and also comical in its concern for beauty, of which it is no concern.

Bletchley Station also is useful, and its usefulness is of a more solid character than that of the myth. Even if everybody grew up it would remain useful. An adult passenger travelling say, to Oxford from the north, enjoys its amenities and particularities. There is a good fire in the refreshment room, and the tone there is amiable and jocose. The "gentlemen's dressing-room" is, I believe, now unique. Anyone of normal curiosity and alertness will be continuously amused and instructed as he dawdles about the platforms. . . .—*From a letter to the "Spectator"*

[Plans for improving Bletchley Station were announced in our February 16 issue.—Ed., R.G.]

In Loco Parentis

(New standard engines for the Eastern Region will bear names famous in British history)

So poets, kings, brave warriors, dashing blades
Must leave their sanctuaries in the shades
And lend the prestige each proud name entails
To keep old Britain safely on the rails.

One can imagine the Immortal Bard
Drawing his fond disciples Stratford-ward,
But Geoffrey Chaucer will be at some loss

In reaching Canterbury from Kings Cross
And every Cymric countenance will glower

If still denied a sight of bold Glendower.

Milton, thou should'st be living at this hour,

England hath need of thee—some malign power,

Some strange miasma strangles her today—

What? They have sent for thee? Hoo-jol'y-ray!

There's the Iron Duke—there Cromwell fumes and frets

At being classed with the Plantagenets. Now we shall see what progress

Bunyan makes
And whether royal Alf still burns the cakes.

"Burns" did I say? What doth he here—good luck!—

A-frattin' with the frightful Sassenach?

Send out the fiery cross! Gather the clans!

Summon the Hielan' chiefs and caterans.

For Hotspur's hordes are streaming north again

In umpteen special trains from White Hart Lane.

Well, there it is—such immortality
Can scarcely ever come to you or me,
But humble men have gilded history's page

And we, no less, can serve this present age.

A. B.



MAROC.

"Come on Joe, full speed round the next bend, they'll just be in the middle of soup"

"London Opinion"

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Overtime Ban Eased

The Victorian branch of the Australian Railways Union has revoked the ban on overtime to the extent of allowing guards to work 96 hr. a fortnight. The guards of the Victorian Railways staged a 24-hr. strike on January 26 and voted for a ban on all overtime.

BURMA

Increased Sabotage

With the liberation of more sections, which for long had been held by the insurgents, sabotage has increased, particularly on the main line. Unless strict vigilance by regular patrolling of track and bridges is exercised by the army units stationed along the line, the Administration will soon be unable to carry out further repairs for want of materials, particularly bridge girders.

Restoration of Services

The Pegu-Waw section, which had remained closed for over two years, was reopened on January 1 with two up and two down trains. Main-line services were revised as from January 15. The main alterations were the reduction in the overall running times of one up and two down mail trains between Rangoon and Pinyin and the introduction of two additional local mixed trains between Rangoon and Pyu. With effect from January 15, seven up and eight down mails began running for the first time since the insurrection between Rangoon and Prome in one day, and two additional trains between Rangoon and Letpadan were introduced.

ITALY

Work on Palermo-Messina Line

Good progress is reported on the electrification of the Messina and Barcellona - Castoreale (28 miles) section of the 144-mile Palermo - Messina main line. Preliminary work in view of the pending conversion is in hand on the Barcellona - Castoreale - Patti - Sant'Agata di Militello section, 38 miles long.

The whole line between Palermo and Messina is single, but the work of doubling the section between Palermo and Fiumetorto, 26½ miles long, has begun.

Articulated Electric Sets

This year the State Railways are to introduce between Milan, Bologna, Rome and Naples new streamline multiple-unit electric sets. They will be partly articulated, consisting of seven coaches mounted on a total of ten bogies. Four will be for passengers; the other three will be: restaurant car and bar with 60 seats; coach with newspaper compartment, wireless and telephone room; and luggage van. Of the 20 axles 12 are to be driven by indi-

vidual electric motors of 200 h.p. each, giving 2,400 h.p. for an estimated tare weight of 300 tonnes. The overall length will be 545 ft., and seating capacity 160. The trains are being built by the Società Italiana Ernesto Breda, Milan.

FRANCE

Lyons-Marseilles Electrification

The Marseilles Chamber of Commerce has passed a resolution in favour of priority for the electrification of the line from Lyons to Marseilles.

Paris Transport Tariffs

Because of increasing expenditure, the R.A.T.P. (Regie Autonome des Transports Parisiens) proposes to increase its tariffs on the Metro and bus lines to balance its budget for 1951. Recent wage increases, estimated at fr.600,000,000 (about £600,000) a year, and further wage demands now under consideration, with increased taxes and fuel costs amounting to fr.500,000,000, as well as

He considers that the increases in fares should not exceed one franc for the Metro ticket and 10 francs for the bus "carnet." In any event the rise in fares will not come into force before the end of March.

DENMARK

New Refrigerator Van

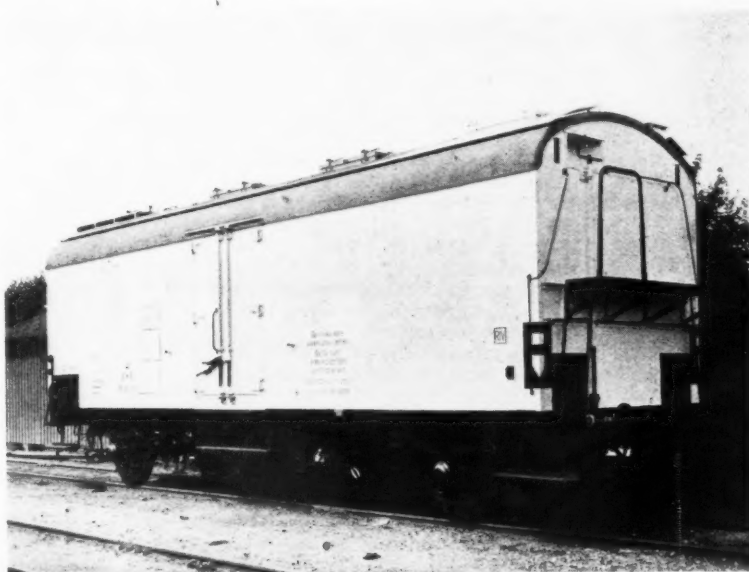
A new trial refrigerator van has been put into service. It is constructed for speeds up to 75 m.p.h. The coolant is dioxide ice, placed in four iceboxes with 150 kg. in each.

NORWAY

"North Sea Express"

The summer timetable of the State Railways, in force from June 15 to August 31, includes a fast diesel railcar service between Bergen and Oslo, to be known as the "North Sea Express," in connection with the Newcastle-Bergen sailings; it will leave Bergen on Sundays, Tuesdays, and Thursdays.

A similar diesel service will operate



New refrigerator van, Danish State Railways

additional social welfare charges, will result in an estimated deficit of fr.3,000,000,000 (about £3,000,000).

To cover this deficit, the R.A.T.P. plans to charge two francs more for each Metro ticket, raising the flat fare from fr.14 to 16. For each "carnet" of twenty bus tickets, the extra charge would be twenty francs, raising the cost from 140 to 160. These charges are estimated to bring in additional revenue of fr.2,800,000,000 a year. The proposals are subject to approval by the Office des Transports, and its President maintains the State should bear part of the cost.

between Oslo and Trondheim, and will enable the journey from Oslo to Loensdal, 680 miles, to be completed in 22 hr.

CZECHOSLOVAKIA

Prague-Moscow Express

As from May 1, direct railway connection with the Soviet Union will be improved by the introduction of a through express. The bogies of the coaches will be adjustable from standard gauge to the Russian broad gauge. The present necessity of changing at Cop,

the Russian frontier station, will be eliminated. The train is to be known as the "Moskvan Express."

At present the halt at Cop lasts two hours mainly because of the need to change trains. Fast trains, connecting at Cop, cover the distance of 1,625 miles between Prague and Moscow in 76 hr. 40 min. eastbound, and 77 hr. 50 min. westbound, all stops included. The journey between Prague and Cop, 510 miles, is covered in 21 hr. 30 min. eastbound, and 25 hr. 30 min. westbound. The Czechoslovak frontier station, Cierna-nad-Tisou, is 5 miles west of Cop.

AUSTRIA

New Station at Linz

The important station of Linz was destroyed during the last months of the war. Even before the war, the main building, which dated from 1860, had become due for reconstruction, and plans for a major reconstruction scheme were being prepared. At one stage, removal to a more convenient site was mooted, but because of the cost had to be ruled out after the war, and the new station had to be reconstructed on the same site.

The new station has been designed in close collaboration with the municipal authorities who organised a competition

for the design of the station "precinct." There is a large square with spacious gardens and approach roads. To break the monotony of an overlong frontage, the station building is flanked by wings at rectangles, one of them bridging a road. On the town side of the square, new private buildings are being erected to harmonise in design with the architecture of the station buildings.

The central part of the main building contains two separate, large concourses for departure and arrival traffic, respectively, which are connected with the four island platforms by two subways. The walking distances between the platforms and the train and bus stops outside the station are reduced to a minimum. The station restaurant extends over the ground floor and first floor. The various wings contain the post office, a coach station and premises of the operating department, including sleeping quarters for train staff. A block of 30 flats for railway personnel is also being erected.

Competitive Rates to Ports

At a conference held at Regensburg (Bavaria) in January, a provisional agreement was reached on freight rates between Austrian stations on the one hand, and Bremen, Hamburg, Trieste, and Rijeka (late Fiume with Susak) on the other. A principal factor has been

competition between Adriatic and German North Sea ports; in recent months there had been a tendency for Austrian imports and exports to be routed via Hamburg and Bremen because of the low German railway rates, despite the shorter distances to Adriatic ports.

WESTERN GERMANY

Marshall-Plan Train

A special Marshall Plan demonstration train has been touring South Germany and the Rhineland. During the halt at Bonn a ceremonial visit was paid by Dr. Heuss, President of the Western German Federal Republic. The train includes a special "German Federal Railways" car, in which is depicted the reconstruction of the railways since the war.

Lightweight Passenger Stock

New lightweight stock for Federal Railways fast passenger services incorporates second class compartments with six seats by day convertible into three berths. Lighting is fluorescent, by co-d-cathode tubes, with a reading light for each seat. For cold weather, windows are double; the second sheet of glazing can be raised to the height of passengers' shoulders. Heating elements are fitted below the windows, instead of beneath the seats.

Publications Received

Slightly Staggered Rail Joints.—A brochure by A. Saldanha, M.A.(Cantab) Chief Engineer, Great Indian Peninsula Railway. 14 pp. 10 in x 7 in. Illustrated. Paper cover.—In advocating staggered as opposed to square rail joints, this brochure sets out to champion the short or small-pitch stagger for joints in both straight and curved track. Though claiming to eliminate the hazard and discomfort of synchronous rolling caused by the half-rail stagger, the short stagger also has its shortcomings when only standard track components are used, leading to a varying elastic modulus of the track and to uncomfortable running conditions.

To eliminate some of these deficiencies, the G.I.P.R. engineers have introduced into their cast-iron plate sleeper track a bifurcated type of tie rod enabling two closely-spaced plates supporting the staggered joint to be connected with a single plate under the continuous rail opposite, thus obviating the bunching of sleepers under the latter. Alternatively, a duplex plate may be used under the joint with a specially slotted standard tie-rod to connect it to the normal plate under the continuous rail. Experience, so far limited to plate sleeper track, has shown the modifications to result in improved running. However, experiments are being conducted with a composite wooden sleeper, with the same objects in view, but this provides a supported joint. Also, in a trough-sleeper road, a half-trough under the continuous rail may

be tied to a duplex sleeper under the joint by a half-length tie rod.

The most effective pitch for short stagger is stated to be equal to half the wheelbase of the standard bogie used for passenger stock, provided that this pitch is less than the closest-spaced bogie wheels running on the line. This subject, being controversial, is discussed in an editorial on page 201.

Easter Holidays, 1951.—That this is the best year for prices and speed and comfort of travel since 1939 for an Easter holiday on the Continent is pointed out in the Easter holidays programme of Thos. Cook & Son Ltd. In addition to the better-known European resorts, the programme includes yachting cruises through Holland and its bulbfields, and holidays in the Balearic Islands, Cyprus, and Malta. There is also a wide choice of holidays in Britain and the Channel Islands.

Cuba. By T. Brimelow, First Secretary (Commercial) to H.M. Legation, Havana. Overseas Economic Surveys. London: H.M. Stationery Office. 89 pp. 9½ in. x 6 in. Paper covers. Price 2s. 6d.—The predominance of the U.S.A. in Cuba's import trade is emphasised by the author of this Board of Trade economic survey. He remarks on the high landed prices of British against American products, which devaluation has not substantially lessened. British diesel engines, he states, have a good reputation in Cuba, though the period of active investment in power plants for sugar production is ended.

There is a short but comprehensive description of the present plight of the Cuban railways. Of travel by Cubans to U.S.A. he remarks significantly "The moral to be drawn by British exporters is that Miami is a good place to make sales to Cubans who find British goods too expensive in Havana."

Hydraulic Pumps.—An illustrated brochure, recently published by the Plessey Co. Ltd., Ilford, Essex, deals with the various designs of hydraulic pumps developed as a result of research in the laboratories of the company. The brochure contains a list of the pumps manufactured, capacity graphs, and performance curves.

Murex Electrode Holder.—An illustrated leaflet, issued by Murex Welding Processes Limited, Waltham Cross, Herts., contains descriptive matter relating to the Murex type H500 electrode holder for heavy duty work. Parts of the holder are numbered to ensure ease of replacement.

Aluminium Alloy Castings.—An illustrated booklet relating to aluminium alloy castings containing nickel has been issued by the Mond Nickel Co. Ltd. This deals with all aspects of castings in these alloys, including early developments, recent metallurgical practice and modern production methods. Also included are a tabulated summary of alloys available, and a series of tables showing the properties of test bars, aluminium alloys for pressure die-casting and standard heat-treatment schedules.

Improved Method of Train Time Analysis

Predetermination of train timing and energy consumption assumes considerable importance under railway electrification

By J. C. Grant, A.M.I.E.E., formerly Senior Engineer,

Chief Signal & Electrical Engineers' Department, New Zealand Government Railways

A CONSIDERABLE amount of skill is required by a driver so that the maximum efficiency may be extracted from the running of any rail or road vehicle. An impatient driver who accelerates his vehicle at its maximum rate, maintaining power to the last moment before braking violently, is a menace on the road to the comfort of his passengers, and the safety of other travellers. Although he may acknowledge their complaints of discomfort during the ride, such a driver does not necessarily appreciate that his method of driving fails to make the most economical use of the fuel or energy at his disposal.

Low consumption of energy and resulting passenger comfort is, however, not the only criterion of skill in driving. The second factor is that which the hasty driver is attempting to exploit to the exclusion of all else, namely, attainment of the required destination as soon as possible. Therefore, if we would wish to define the optimum running efficiency of a vehicle over any given route, we would have to show when the product of the total fuel or energy consumption and the total time taken on the run has its minimum value.

In practice, this ideal can only be approached, even by a skilful driver, after the route becomes known to him. In order to achieve this he has to have the "feel" of the machine which he controls; he must know over what distance the power should be applied, the extent of the coasting he should allow, and the right point at which the brakes should be applied.

When the driver becomes experienced in the management of his vehicle and the configuration of the route he has to cover, the performance of these functions becomes almost subconscious in that there remains little premeditated thought associated with his application of the controls at the most advantageous moment. Nevertheless, the fundamental fact still holds, that the remnant of conscious effort bases its judgment on the factor of distance, not on that of time. Despite the fact that one of the main aims of the run is to take as short a time as possible, without the energy consumption becoming excessive, the predominating features are that a fixed distance has to be covered and that speed restrictions on curves, and changes of gradient, are determined solely by place and not by time.

These remarks apply equally to the railway locomotive driver. In fact, those observations regarding energy consumption are even more pertinent to the train driver, because his journey is not disturbed to nearly the same ex-

tent by other traffic as the more ubiquitous car driver, since he is forewarned by signals in known positions of any forthcoming speed change demanded by exigencies of traffic and track.

Basis of Established Methods

The predetermination of train-timing by calculation for any given route is usually rather a laborious affair involving long tables of figures compiled on a step-by-step method in which increments of time are determined over given increments of speed from the acceleration or retardation due to the resultant force assisting or opposing the motion of the train. Alternatively, an equally laborious graphical method may be adopted, embodying the well-known speed-time curve.

Owing to the complexity of the normal theoretical analysis, therefore, train timing under steam traction is usually based on many years of practical operation whereby the skill of generations of experienced drivers has established a timetable which no theory can better. If any calculations are required, it is usually only the maximum performance of the locomotive which is desired, such as the balancing speed on the level, or the heaviest trailing load that can be drawn up the steepest grade.

The predetermination of train timing and energy consumption assumes a high importance under railway electrification, however, because many electrification schemes depend for their promulgation on their ability to improve the time schedules on a route already loaded to full capacity under steam. Furthermore, the saving in running costs, including those due to energy consumption, often form one of the primary reasons for undertaking conversion from steam to electric traction.

The complication in the analytical methods of train timing normally employed arises largely from the fact that the theoretical man has not the advantage of the practical driver in seeing where he is going. The train is represented in theory by a motor characteristic in which tractive effort is plotted as a function of speed. This graphical train is then introduced to a set of resistances applicable to the section of track on which it is supposed to be. The train then proceeds by a series of jumps in which the time taken for each leap is the primary factor to be determined whilst the distance covered by the leap only emerges after a secondary operation.

Inevitably, a jump is made beyond the region to which the assumed track resistances apply, and the attempt has to be repeated for a smaller increment.

The difficulties become even greater when it is required to bring the train to a standstill at a given point; several trials usually have to be made with differing amounts of coasting and braking before a passable result is achieved.

What is required, therefore, is to give the theoretical driver a sight of the track similar to that possessed by the driver in practice. This can only be done by making distance instead of time the predominant factor. In the method now described, a speed-distance curve is plotted directly from the motor curve of net tractive effort as a function of speed. The time-distance graph can then be plotted subsequently, rather than concurrently, thus improving the ease of construction of these curves.

When this method is adopted, it is found that the "driver" of the theoretical train soon acquires a skill comparable to that possessed by the experienced driver in practice, for, after a few trial runs, he quickly becomes acquainted with the capabilities of his graphical train, and becomes adept in his choice of the extent of its coasting to promote the optimum running efficiency.

Speed-Distance Construction Curve

The basis of the method as illustrated in Fig. 1 was obtained from the Traction Department of the General Electric Co. Ltd. of England. The curve of net tractive force expressed in lb. per ton of gross train-weight is plotted with the force axis reversed as shown. The net tractive effort is obtained by subtracting the train resistance from the tractive effort at the wheel rim for each value of speed. The axes for plotting the speed-distance curve are erected to the right-hand side of the speed-force characteristic.

At any given speed v , which is the mean of a chosen increment Δv an inclined line PQ is drawn from the net tractive force curve through the point Q on the abscissa, where OQ is the grade and curve resistance opposing the motion of the train. For an up-grade, Q is taken to the left of O, and for a down-grade, where the curve resistance does not cancel out the grade resistance, Q is taken to the right of O. The projection of PQ on the abscissa, that is, NQ, represents the force available for accelerating the train:

$$F = 112a \text{ lb./ton}$$

where a m.p.h./sec. is the acceleration resulting from the application of the force F . The factor of 112 mainly represents the acceleration due to gravity, but also takes into account the acceleration of the rotating parts of the train.

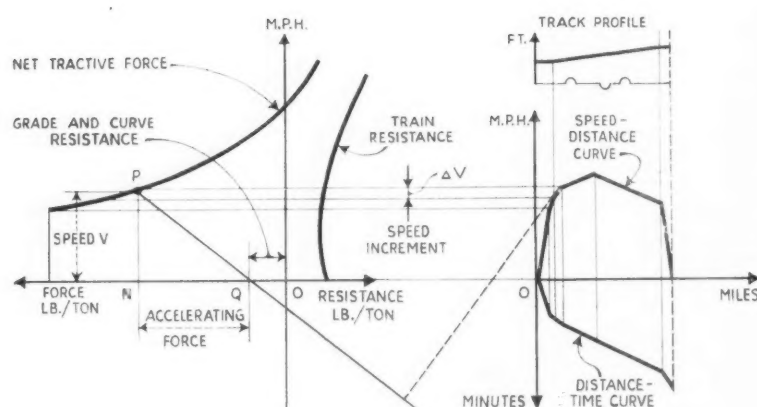


Fig. 1—Diagram of constructional basis for plotting speed-distance curve from the net tractive force characteristic for train

It is to be noted that the gradient of the line PQ is

$$\text{Speed} = \frac{PN}{NQ} = \frac{v}{112a} \text{ m.p.h.}$$

Now, if the speed increment Δv is small enough, the force F can be considered to operate over the whole period during which the train is accelerating through the increment. The corresponding portion of the speed-distance curve can, therefore, be considered as a straight line. The time for acceleration through the speed increment is $\frac{\Delta v}{a}$ sec., so that the distance travelled at an average of v m.p.h. is:

$$\frac{v}{3,600} \cdot \frac{\Delta v}{a} \text{ miles.}$$

Thus, the inverse gradient of the speed-distance curve is:

$$\frac{\text{Distance}}{\text{Speed}} = \frac{v}{3,600a} \text{ miles.}$$

It is seen that this is proportional to the gradient of PQ given above. Furthermore, if the scales allotted to the speed-force and speed-distance curve are chosen in the ratio of 3,600 : 112, i.e., 32:1, then each chord of the speed-distance curve can be drawn at right angles to a generator such as PQ. This manifestly applies for negative as well as positive accelerating forces, i.e., for decreasing as well as increasing speeds.

Once the speed-distance curve is drawn, the distance-time curve can be easily plotted, since each line on the latter curve can be drawn at a given angle corresponding to the average speed v of the increment chosen.

Relationship Between Scales

In terms of the normal units employed for plotting these curves the scales should be related in the following manner:—

$$\frac{\text{m.p.h./in.}}{\text{lb.p.t./in.}} = 32 \frac{\text{miles/in.}}{\text{m.p.h./in.}}$$

That is:

$$(\text{m.p.h./in.})^2 = 32 (\text{lb.p.t./in.} \times \text{miles/in.})$$

Probably the most suitable choice of

scales for main-line diagrams is that based on track profiles with a scale of 1 mile/in. Speeds can then be plotted to 16 m.p.h./in. and forces to 8 lb. per ton/in. Other suitable groupings with a more open diagram needed for suburban operation are:—

- 50 chains/in., 5 lb. per ton/in., and 10 m.p.h./in.
- 20 chains/in., 8 lb. per ton/in., and 8 m.p.h./in.
- 40 chains/in., 9 lb. per ton/in., and 12 m.p.h./in.

The best choice for a time-scale is that which gives a 45 deg. inclination of the time-distance curve at 30 m.p.h. An adjustable set-square graduated in terms of speed, as illustrated below, will be found of great assistance in plotting the time-distance curve.

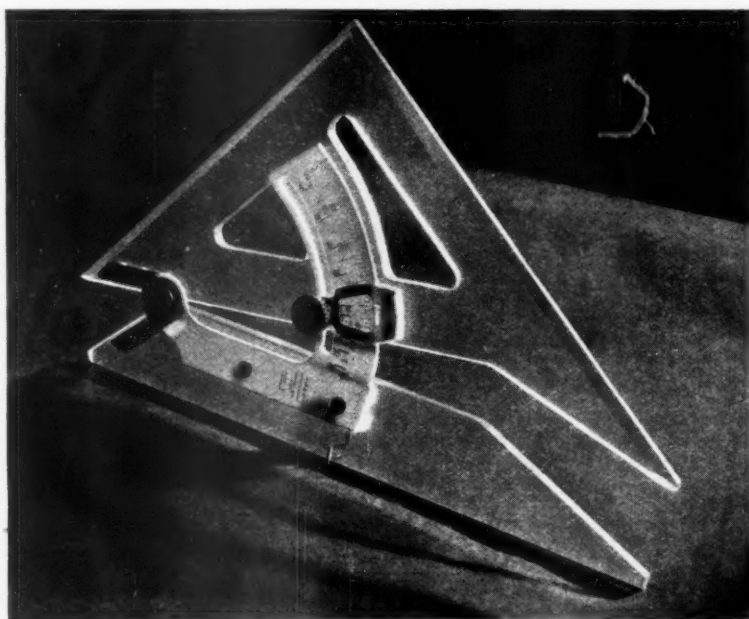
In general, standard speed increments

will be used for plotting the speed-distance curve, in order that currents can conveniently be listed in the form of a table for the set of speed values chosen. Alternatively curves of current against speed can be drawn. Currents may be plotted to a base of distance or of time according to the purpose for which the diagrams may be required. If the diagrams are mainly drawn from the point of view of the locomotive and its performance, so that the energy consumption on the run is the salient feature, then in this case a current-time curve is essential.

On the other hand, if substation loading is of interest, current-distance curves may preferably be plotted, because load sharing between substations is dependent on the position of each train in relation to them.

It has been found an advantage to express all currents in terms of the continuous current rating of the motors. This means that a standard current scale can be employed for all diagrams, ranging from zero to twice the continuous current rating, which is seldom exceeded in practice. Furthermore, the ultimate value of the exponential temperature rise of the motors in service is approximately proportional to the ratio of the mean square current to the square of the continuous current rating, which means that the temperature rise during the progress of a run can be determined more simply from a diagram based upon the ratio of the motor current to its continuous rating.

Finally, the energy consumption of any given locomotive can readily be expressed in terms of the product of the mean value of the current ratio, the time, and a constant composed of the mean contact wire voltage, the con-



Adjustable set-square showing graduations in terms of speed

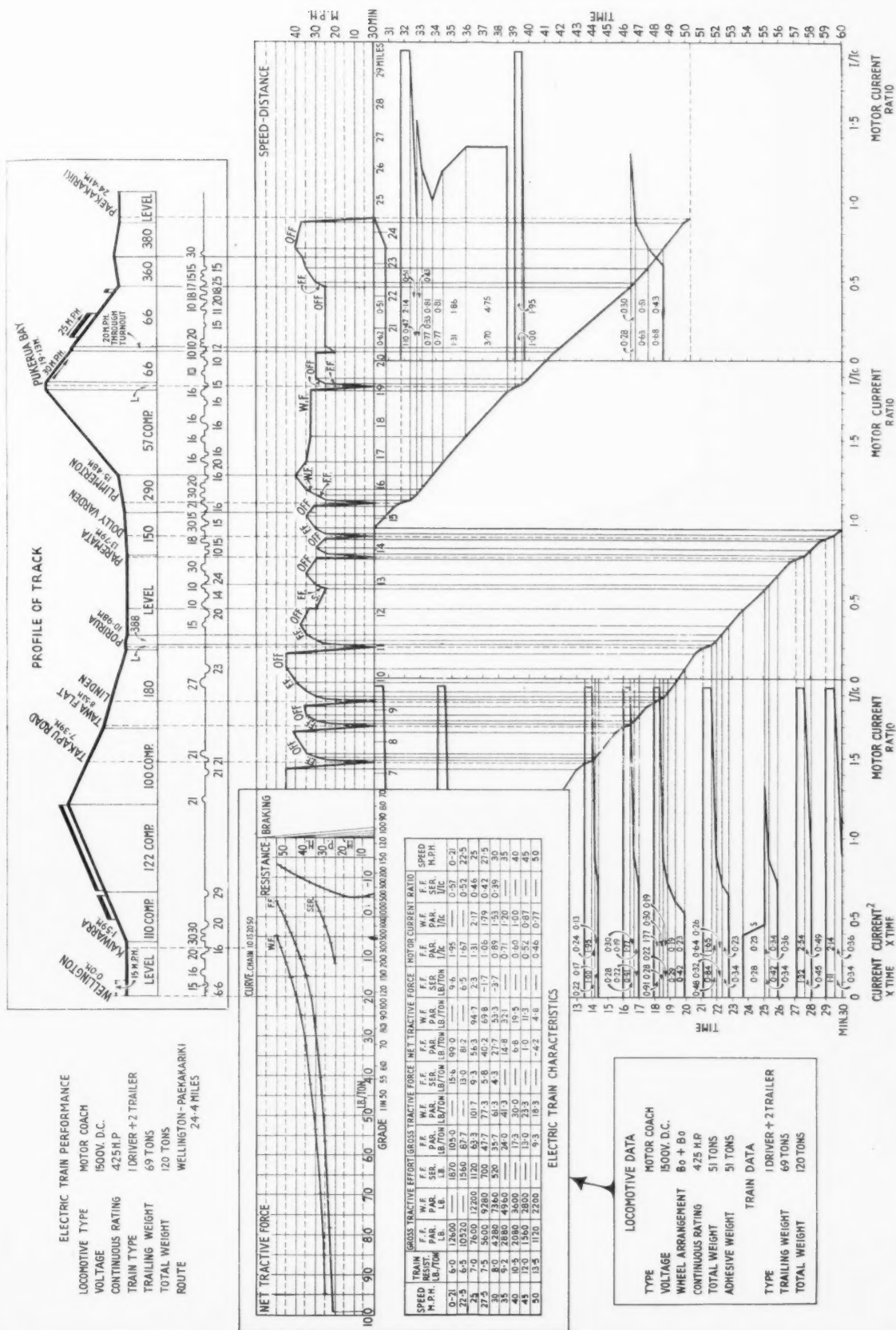


Fig. 2—An electric train performance sheet, overlaid with an electric train characteristic sheet

tinuous rating, and the number of motor paths in parallel.

The reproduction in Fig. 2 shows a speed-distance, distance-time, and current-time curves, plotted to a format which has been found most suitable for normal purposes. The distance scale of one mile to the in. was chosen to conform to the track profiles in use on the New Zealand Railways. Speeds are plotted at 16 m.p.h./in., forces at 8 lb. per ton/in., and times at 2 min./in.

The main diagram, "Electric Train Performance," which gives all information regarding the run of a particular train on a given section of track, is arranged with the track profile at the top, the speed-distance curve in the centre, and the distance-time and current-time curves below. A total distance up to 30 miles can be accommodated on a normal size drawing sheet, and if the time axis extends downwards to the convenient limit of 30 min., then it will be found that the time-distance curve will require two half-hour sections for trains travelling the full distance at an average speed greater than 30 m.p.h. Even for the slowest trains it would be unusual for three half-hour sections of the time-distance curve to be exceeded.

For the current-time curve, the current scale necessarily runs in the same direction of the drawing sheet as the distance scale. Up to three, 30 min. sections of the curve are allowed for by providing a span of 10 in. for each section. Unit value of the current ratio is placed at the centre of each span.

The overlapping diagram on the left-hand side of the reproduction, entitled "Electric Train Characteristic," represents the train which is required to run over the given section of the track. It is separate from the main diagram so that it can be moved over it as the construction of the speed-distance curve proceeds. This diagram consists essentially of the net tractive force curves employed while the locomotive unit is being driven by its motors, the train resistance curve which is used during the coasting period, and the braking lines which correspond to a chosen standard braking rate.

The train in the reproduction is a d.c. multiple-unit with two groups of motors under series-parallel control and one weak field tapping. Three net tractive force curves are, therefore, required, the lower one for the motors in series with the full field connection, the middle one for the motors in parallel on full field, and the upper one for the motors in parallel with the weak field tapping. During the resistance notching period of acceleration it is assumed that the net t.f. is constant corresponding to the mean accelerating current.

For assistance in determining the point Q on the force axis through which the generator PQ must be drawn the axis has been graduated in terms of grades and radii of curves. This is possible because all forces are expressed in terms of lb. per ton of gross train weight. Speed lines at intervals of 5 m.p.h. have been ruled across both dia-

grams and in general these are employed as the standard increments for plotting the curves. The mid-points of these increments are clearly marked on the train resistance curve, as well as the net tractive force curves, to assist in determining the point P' on the line PQ. The straight line acceleration period can be treated as a whole during plotting.

Construction Procedure

The following process has been adopted in constructing the curves:—

1. A standard track profile is affixed to the top of the sheet so that the required starting point corresponds to the zero of the distance axis. Vertical lines are then ruled downwards from the profile across the speed-distance graph, corresponding to each change of state such as gradient changes, speed restrictions, and stopping points.

2. The train sheet is placed alongside the main diagram so that speed divisions on the two sheets correspond to one another. The speed-distance curve is then plotted for each increment of speed employing a straight edge and a set-square. The straight edge is laid so that it passes through the point on the net tractive force curve representing the mean tractive force for the chosen increment, and the point on the force axis corresponding to the combined grade and curve resistance.

A portion of the speed-distance curve is then drawn at right angles to the straight edge and extending between the limits of the speed increment chosen. At times, when climbing a steep grade, net tractive force is exceeded by the grade resistance, so that a decreasing increment of speed must be chosen. The balancing speed, when the net tractive force equals the grade and curve resistances, is immediately apparent.

When a stop or speed restriction is approaching a period of coasting must be allowed before braking. This is where the skill of the "driver" must be employed in a similar manner to that of the driver in practice. If the braking line is drawn in first the coasting line can then be plotted without much trouble. For braking, a line is drawn down to the stopping point parallel to that one of the inclined lines on the right hand side of the train sheet which commences at the approximate speed at which the brakes will be applied. The coasting line is drawn with ruler and set-square in the same way as the tractive sections of the curve; the straight edge should pass through the mean resistance force for the expected speed increment on the train-resistance curve.

3. The distance-time curve is now plotted by ruling vertical lines from the speed-distance curve at the points where the straight portions intersect so that increments of distance corresponding to the chosen speed increments are obtained. An adjustable set-square, preferably graduated in terms of speed, is then set for angles corresponding to the mean speed of each increment; with the aid of a tee-square, straight lines are

drawn across each distance increment in the form of a continuous graph, except that it is broken into 30-min. sections for convenience of arrangement on the drawing sheet.

4. Horizontal lines for time increments corresponding to the distance and speed increments are then drawn across each section of the distance-time curve. Points are plotted on each line as given by the motor current ratio for the particular speed and field tapping. The points are then joined up to form the current curve.

5. For the complete performance of the locomotive to be recorded for the run, it is necessary to sum the incremental products of current and time giving energy consumption, and the incremental products of current squared and time from which the motor temperature rise is obtained. A planimeter is often used for this purpose, but this necessitates plotting the current squared curve. It is more convenient to calculate both sets of products from the current-time curve; these are listed in two columns, each figure applying to the time interval in which it appears. Summation of these figures enables the energy consumption and the motor temperature rise to be obtained over any desired portion of the run.

The construction of the curves can be further speeded up if a pantograph type of drawing machine is used. Such machines generally incorporate two straight edges at right angles which can be rotated to any angle desired. This arrangement is ideal for plotting the speed-distance curve and the distance-time curve provided the angular rotation of the straight edges can be calibrated in terms of speed.

Advantages of Speed-Distance Method

In conclusion the advantages of the speed distance method of train time analysis are given:—

1. The use of distance instead of time as the basis of construction places the analyst on the same footing as the train driver with a clear view ahead.

2. All curves can be plotted independently of one another, so that the progress of drawing can be speeded up, due to the possibility of concentrating on one process at a time.

3. Simplicity in construction arises from the use of straight edges and set-squares without dividers.

4. The same length of track can be incorporated on a drawing sheet irrespective of the average speed of each train. Methods based on time vary considerably in this respect.

5. The complete performance of the train at any point is immediately apparent from the completed sheet.

The above advantages give rise to a much greater speed of construction and analysis of results as compared with the usual methods. It has been found that a run up to 30 miles can be completely analysed with all calculations in a day's work. This is at least double the rate with which other methods employed have yielded a similar result.

The Railways of North Africa

Impressions of a recent tour

(By a Correspondent)



Passenger train being marshalled at Algiers terminus by Hunslet diesel locomotive

MOST of the railways along the Mediterranean littoral from the Gulfs of Hammamet and Gabes to the Atlantic have more than recovered from the war destruction and use. With two exceptions their general physical state is better than it was in 1939, because the Allied armies increased the traffic capacities of trunk lines by heavy rails, good ballast, strengthened bridges and new loops; and because, since 1945, Marshall or other "aid" plans have been to the fore in supplying ultra-modern motive power.

Tunisia

The Cie. Ferrière des Chemins de Fer Tunisiens (C.F.T.) has two systems. The metre-gauge section runs south and south-west of Tunis and has a route-length of 685 miles; the standard-gauge system, extending to 310 miles, runs north and west of Tunis. As regards permanent way, buildings, and rolling stock, the railway is scarcely back to pre-war standards; and though the management has plans for complete rehabilitation, lack of money is setting a limit to the pace. This often leads to awkward travelling, for passenger traffic has increased substantially since pre-war years, though freight traffic is about the same. In 1938 the C.F.T. carried 6,228,000 passengers of whom 3,612,000 were suburban; the 1948 figures were 11,631,000, of whom 7,794,000 were suburban. Passenger-km. were 159.1 million in 1938, of which 44.6 million were suburban; and in 1948 they were 281.4 million, of which 101.3 million were suburban.

Freight traffic amounted to 2,153.6 thousand tonnes and 427.2 million tonne-km. in 1938, and to 2,345.2 thousand tonnes and 397.8 million

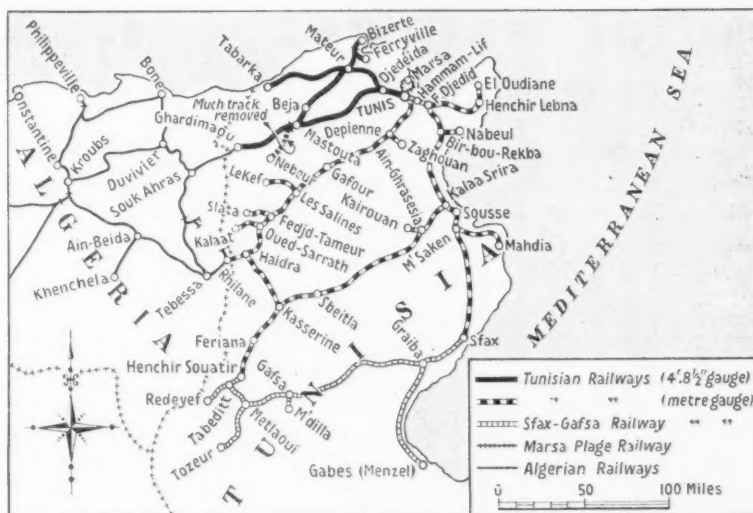
tonne-km. in 1948. Of the two tonnages, iron-ore traffic accounted for 790.4 thousand tonnes in 1938, and for 734.6 thousand tonnes in 1948.

There are still 160 steam locomotives

car sets, and eventually the total stud of railcars will work all the local and nearly all the main-line passenger traffic. Orders for 600 wagons are being completed; this stock is being fitted with Westinghouse brakes, and eventually all passenger and freight vehicles will be so equipped. Workshop repair methods are being overhauled and on the locomotive side are being adapted for diesel work.

Steam trains on the standard-gauge section are worked by 4-6-2 engines built from 1914 to 1930 and by much older 2-6-0T engines. None of the pre-war 2-10-0 engines was seen in service during a recent visit; but at Ghardimaou, the Tunisia-Algeria frontier station, a Hunslet "Austerity" 0-6-0ST was at work, and in contradistinction to every other steam locomotive seen in Tunisia, was in beautiful condition.

The main line from Tunis to Ghardimaou and Algeria is single and is practically unsignalled. With 230-240 tons of trailing load the 72-ton 4-6-2 engines maintain a steady 14 m.p.h. up long 1 in 80 grades and rarely exceed 40 m.p.h. downhill or along the level; but the schedule for the whole 117 miles from Tunis to the frontier station is 238 min.,



The railways of Tunisia

in the stock list, but by no means all of these are in use; and the company has in course a programme for the complete dieselisation of both narrow and standard-gauge sections. Seven diesel locomotives are in traffic, and delivery has just begun of another 33 with 735 b.h.p. Sulzer engines. Also, 18 railcars and 12 special trailers are on order to supplement the existing 17 single cars and twin-

equivalent to 29½ m.p.h. Quite good services are run by railcars on the metre-gauge line south to Sousse and Gafsa. Tunis Station has five platforms and serves both gauges; but like Oran and other North African stations, the tracks are so arranged that each gauge must cross the other immediately outside the station in order to go off in the respective directions. Much of the sub-

urban traffic out to Hammam-Lif and beyond is hauled by old 0-4-4-0 Mallet steam tank locomotives.

Algeria

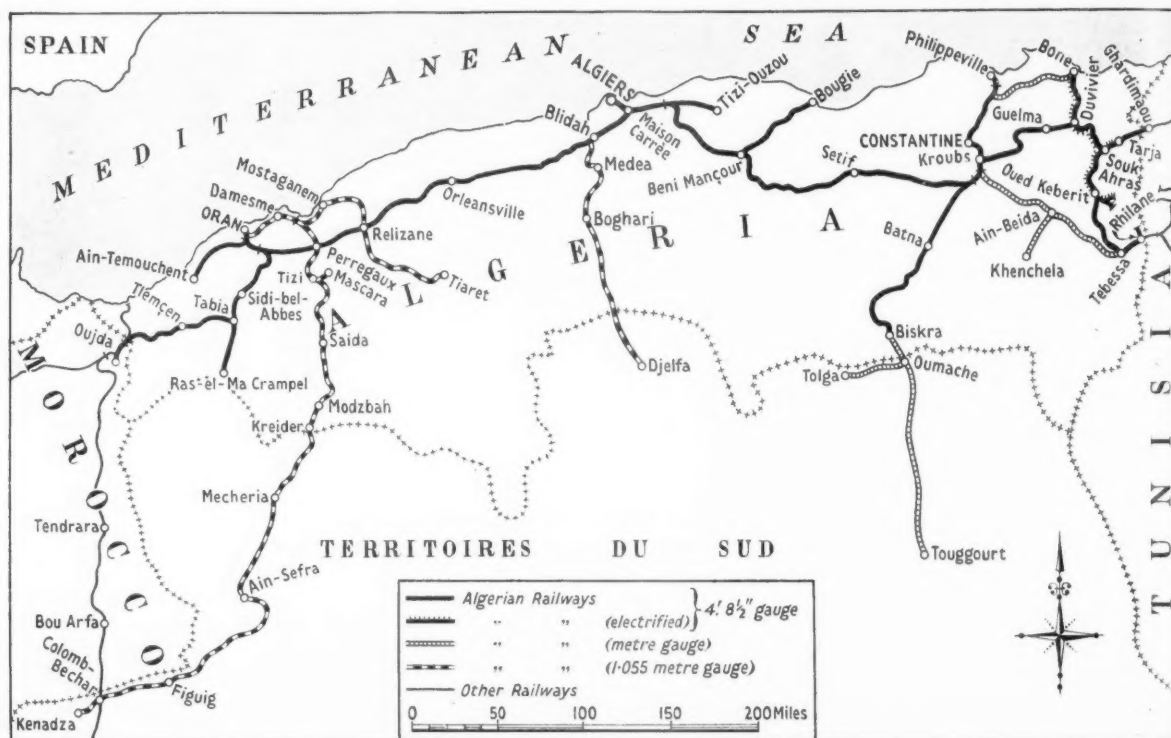
The Algerian Railways (C.F.A.) consists of a long transversal trunk route going east to west, with important lines at right angles running down to the coast at Bone, Philippeville, Algiers, and Oran; and with several minor lines, including the long tentacles going south to the borders of the Sahara. There are 1,270 miles of standard-gauge and 1,307 miles of narrow-gauge lines, and the important 60-mile narrow-gauge route from Bone to St. Charles is in process of conversion to 4 ft. 8½ in. gauge. The Ghardimaou-Oujda line forms part of the great North African "transversal" along which through coaches run from

Souk Ahras-Oued Keberit line (electrified at 3,000 volts d.c. in 1932-33) has been made from Souk Ahras eastward for 5½ miles along the main line to Tunisia as far as Tarja. The grade throughout averages 1 in 42 uphill from Tarja, with a maximum of 1 in 38, and there are several tunnels, including one almost a mile long. The C.F.A. 89-ton counter-pressure-braked 4-8-2 steam engines used to take about 220 to 240 tons up this grade. Also, at the beginning of the war, to aid the collection and preliminary marshalling of the iron ore trains, and to get them to Oued Keberit, 24 route-miles of line round the Ouenza and Bou Khadra mines were electrified; and this conversion accounted for no fewer than 303 track-miles, compared with the 130 track-miles between Oued Keberit and Bone.

standard-gauge steam locomotives, including 30 large Beyer-Garratts, are to be seen lying at Hamma-Alger and outside Oran.

Shunting at Constantine, Algiers, Oran, Perregaux, and Sidi-bel-Abbès is done by Hunslet 204-b.h.p. diesel-mechanical locomotives. A well-equipped diesel locomotive depot and workshop was erected on the outskirts of Algiers about three or four years ago.

With the exception of one bridge, and two-, three-, or four-mile sections of embankment, and of line almost without a formation and with the appearance of being laid on mud, where a restriction of 10-12 km.p.h. is in force for 4 or 5 km., the whole of the main line is in excellent condition and beautifully ballasted, though most of it is single track. Concrete sleepers with strong steel



Map of the Algerian railways, and connecting lines in Morocco and Tunisia

Casablanca to Tunis, 1,384 miles in 47½ hours, and the summit level of which, by Setif, is 3,570 ft. high.

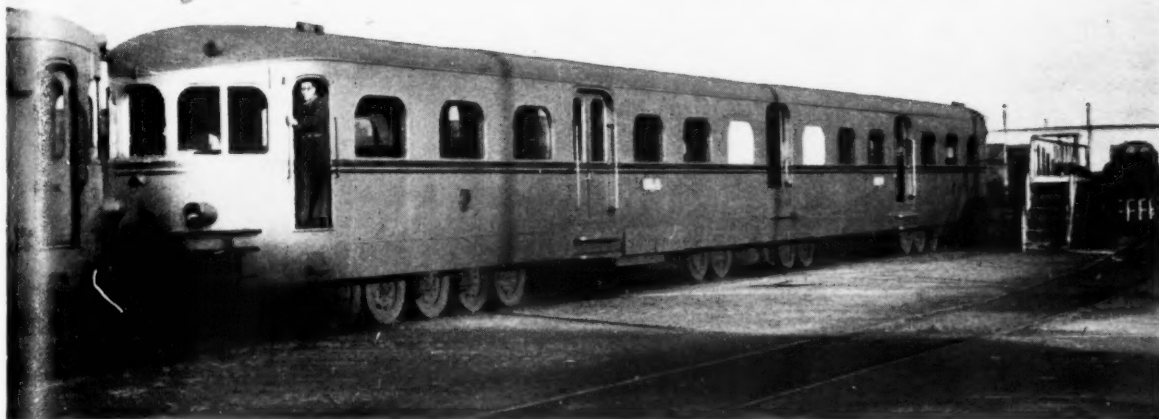
Many secondary lines have been closed since 1939, such as those from Bone to La Calle and from Orleansville to Ténès, and replaced by road services. The complete list shows 13 lines closed in the last 15 years; and one or two sections, such as from Tizi to Mascara, are now open only for freight traffic. In general, the passenger services on the remaining narrow-gauge lines, particularly in the Oran district, have been cut substantially below the pre-war level, and several have only one train in each direction daily.

Since 1939 a much-needed electrification extension to the 103-mile Bone-

From Tarja one must go practically to the other end of the country to find any more standard-gauge main-line steam locomotives at work, for the Souk Ahras to Duvivier section of the "transversal" is electrified as being part of the Bone line, and heavy diesel locomotives of 1,000 and 1,500 h.p. do all the work from there to Constantine, Algiers, and Oran. Only the section from Oran through Sidi-bel-Abbès to the Moroccan frontier at Oujda now has steam-worked trains, and the principal trains even on that route are diesel hauled. The steam locomotives in use are mainly American "Austerity" 2-8-0 engines, with old 0-8-0 tender engines for freight and other services round Sidi-bel-Abbès. Long, melancholy lines of disused

tie rods are used over much of the main line, and extensive rail welding by flash-butt methods has been done.

Between Algiers and Constantine, Philippeville and Bone, over a route with a ruling grade of 1 in 38 with 985 ft. curves, there is one day and one night service in each direction; and the same between Algiers and Oran, over a ruling grade of 1 in 50 uncompensated. There is one Morocco-Algeria-Tunisia train in each direction daily, which forms part of these other day and night services for different parts of the journey. It runs into and out of Algiers, but not Oran or Constantine, the remarshalling there being carried out at the junction stations of St. Barbe du Tlélat and Kroubs respectively.



Two of the Michelin petrol-engine pneumatic-tyre railcars which maintain an interurban service between Algiers and Blidah, Algerian Railways. The cars are shown being serviced in the Hammam-Alger depot

Michelin pneumatic-tyre railcars operate what is almost an interurban service between Algiers and Blidah, and other standard-gauge Michelin railcars operate on the Constantine-Biskra lines. But the railcar working is more developed on the narrow-gauge system at the Oran end of the country, particularly on the Arzew and Mostaganem lines, and on the long Colomb-Bechar route; and also, since before the war, on the Biskra-Tougourt branch. Sulzer-engine and Saurer-engine diesel-electric baggage vans (or *fourgons*) of 600 h.p. are used to haul trailers on the Biskra-Tougourt line, which is one-metre

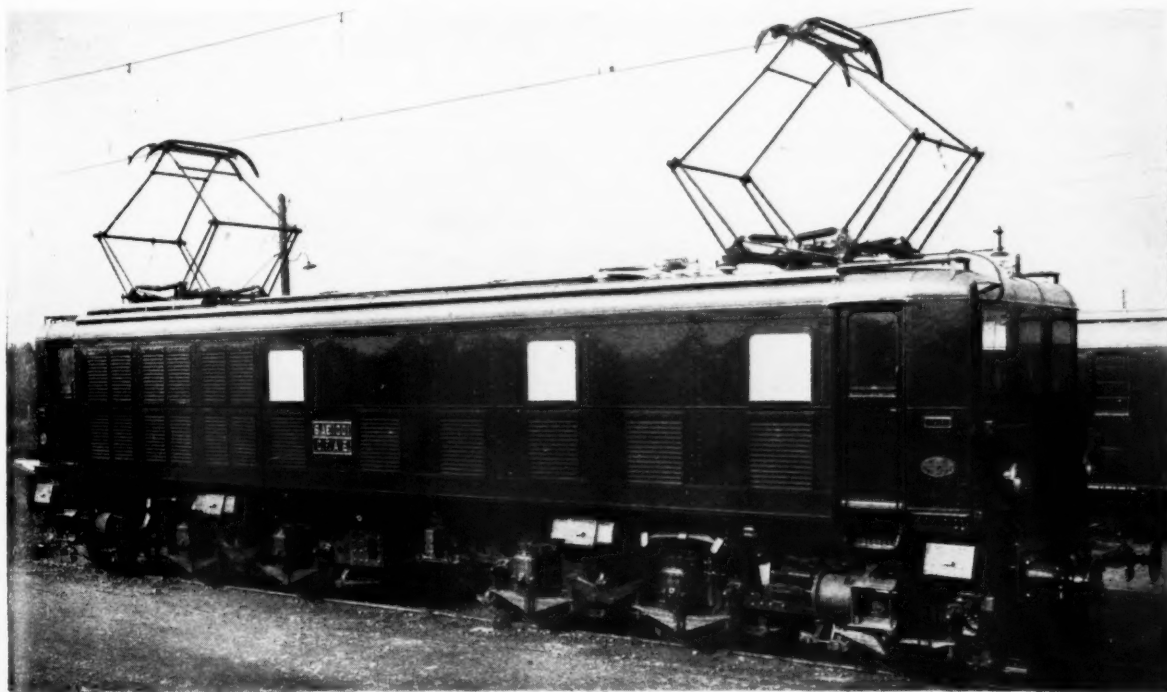
gauge; but on the western line the narrow-gauge is 1,055 mm. and 420 h.p. Sulzer-engine *fourgons* are used. This principle is about to be developed to the extent of 1,470 h.p. *fourgons* for the standard-gauge lines.

Passenger and freight rolling stock is clean and in good condition, with none of that shabbiness seen in Tunisia, except in the C.F.A. coaches that run through on the Bone and Constantine to Tunis service, and on some of the trains west of Oran. First, second, and third classes are run; and as in Tunis many mixed trains are operated. Armed train guards ride in the coaches between

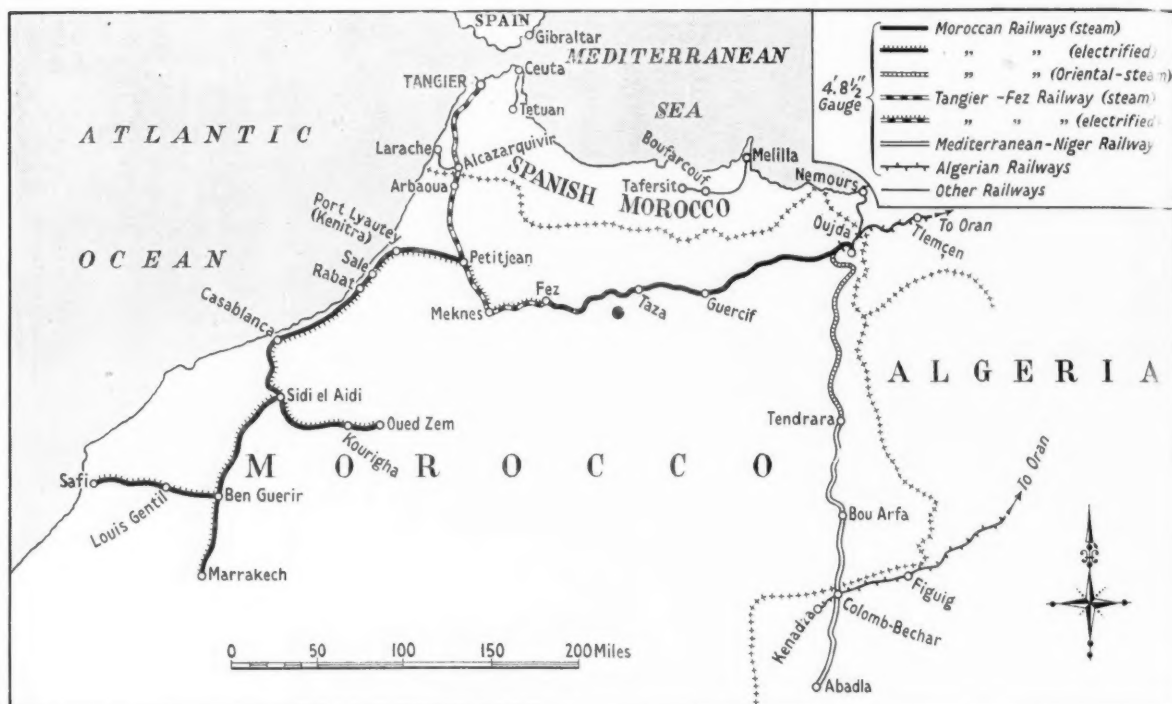
Oran and the Moroccan frontier. Ruling grades on this section are 1 in 50 to 1 in 55; and with normal 250-260-ton passenger trains the 1,000 h.p. diesels sustain 18 m.p.h. up these banks.

Morocco

The railways in Morocco present a curious contrast. The Moroccan Railways seems well run and well stocked. Track on both steam and electrified main lines east of Casablanca is good, heavy, and well ballasted; the locomotives and rolling stock are well maintained, and the stations are clean and have more than a pretence at organisa-



A 113-ton 2,400-h.p. 3,000-volt d.c. electric locomotive on the Bone-Tebessa section, Algerian Railways



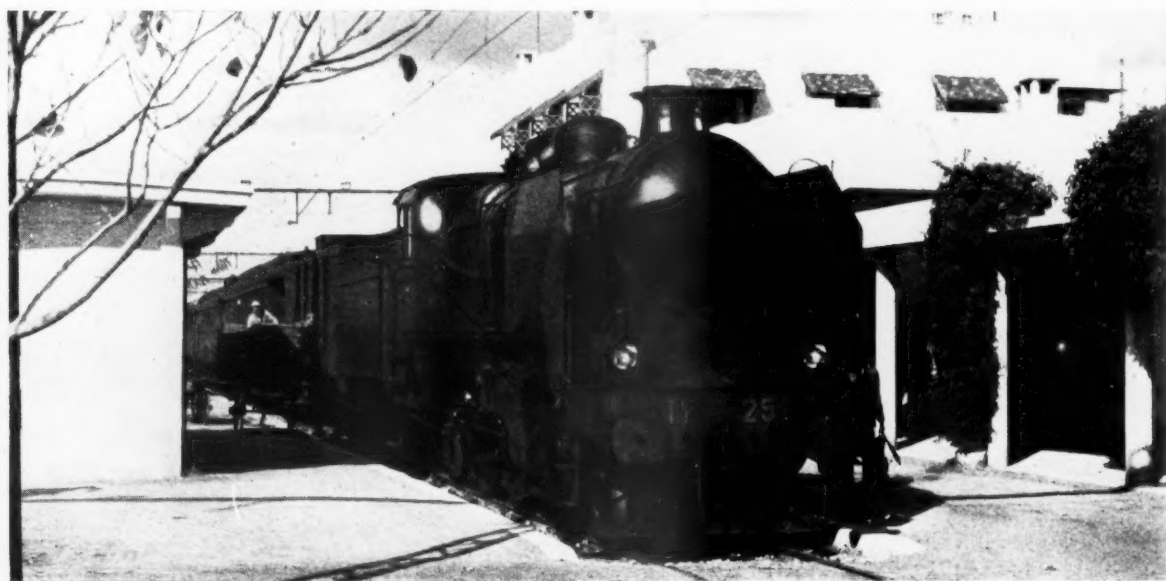
Map of Morocco showing the three railway systems

tion. On the other hand, the Tangier-Fez Railway is almost past praying for in regard to the steam-worked section. Incidentally, the T-F is all main line. Even on the electrified section between Petitjean and Fez the working is not so punctual or the organisation so good as on the C.F.M., but that is due partly to sloth on the steam-worked route extending from Petitjean northward through French Morocco and then Spanish Morocco to Tangier.

The close working and purchasing alliance between the three legally independent companies, Chemins de Fer du Maroc (C.F.M.), Cie. Franco-Espagnole du Chemin de Fer de Tanger à Fes, (T.F.), and Ch. de Fer du Maroc Oriental has had a good effect on the T-F, and that effect is likely to spread to all sections of it, though *mañana* is always likely north of the frontier station at Souk-el-Arba. One reason for rolling stock and certain steam

power not being as good as on the C.F.M. is that the T-F is a little older, and that under the terms of its constitution motive power, mainly 0-8-0, 2-8-0 and 2-8-2 steam types, and rolling stock were supplied by the French P.O. and P.L.M. railways.

The C.F.M., C.M.O., and T-F are run by a common board in Paris, but the C.F.M.-C.M.O. combine and the T-F have separate general managers in Morocco, though for motive power and



Arrival of morning train from Tangier at Petitjean in charge of ex-Paris-Orleans Railway 2-8-0 steam locomotive



Mixed train for Beja at Mastouta, Chemins de fer Tunisiens, in charge of 2-6-0T locomotive rebuilt in 1907 from a 0-6-0T built in 1879

rolling stock the chief mechanical engineer of the C.F.M. has general oversight.

Petitjean, junction of the C.F.M. and T-F main lines, and junction of the Tangier line with the Tunis-Algiers-Fez-Marrakech North African "transversal" is a vital point, for up and down trains on three lines all meet, interchange and pass there; and the steam train from Tangier usually arrives after all of them should have been off and away. Apart from that, and the time-keeping of the northbound train to Tangier, punctuality is good.

Oujda-Fez Section

The C.F.M. line from the C.F.A. at Oujda to Fez is single track like almost the entire system, and is steam worked by Polish-built 2-8-2 engines kept in good condition. The tenders, however, were built in Belgium and hold 9 tons of coal and 7,600 gal. of water. There are a few big 2-8-2T engines to hump shunt at Oujda and perform miscellaneous duties. Long-distance trains carry first, second, third, and fourth class coaches, and even the last named are clean and in good order. But, of course, the Moroccan Railways not being constituted until 1922, there is little in the way of old relics. The principal trains weigh 375-400 tons and the 2-8-2s handle these in workmanlike fashion, with a good crisp, exhaust beat. Speeds rarely exceed 45 m.p.h. Grades are heaviest on the Fez-Taza section, and Fez itself is avoided by two tunnels a mile-and-a-half long, which bring the line to the main station outside both the French city and the Kasbah, but reasonably convenient to both.

Electrification

Electrification extends from Fez to Petitjean (T-F), and Meknes-Petitjean was the first section to be converted in view of the steep grade uphill going south. All C.F.M. lines west and south-

west of Petitjean are electrified, the C.F.M. and T-F lines forming one 3,000-volt d.c. system fed with power by a steam station at Casablanca and a hydro-electric plant at Sidi Machou. But the two companies own their own electric locomotives. All are of the Bo-Bo type, and the T-F needs only seven to work all passenger and freight traffic over 69 route miles.

Only the one "transversal" express in each direction carries sleeping cars, though with Tangier cars attached and detached at Petitjean; and these also are the only trains with restaurant cars apart from a buffet car service between Casablanca and Petitjean and another between Casablanca and Marrakech.

There is now no trace of the old 600 mm. gauge decauville military railways which were the first lines in Morocco. The last of them—Guercif-Midelt and Ouezzane area—were taken up in the early 1930s. Connecting with the T-F line in Spanish Morocco at Alcazarquivir is a small independent railway running 22 miles to the Atlantic coast at Larache. Traffic on it has gone down since 1939 and the one up and one down mixed trains each day are hauled by 2-6-2T engines.

One other railway has one of its two roots in Morocco—the Ch. de Fer Méditerranée-Niger. As shown by the map, it joins end on with the Moroccan Eastern line at Tendirra and crosses the C.F.A. at Colomb-Bechar. Actually, the line is open as far as Abadla, 56 miles south of Colomb-Bechar, over which southern section a mixed train with fourth class passenger accommodation only is operated twice a week. Railcars are used to give a through service from Oujda to Colomb-Bechar, and diesel locomotives haul mineral, general freight and ordinary passenger services over the northern half of the line.

B.O.A.C. TO CALL AT ZURICH—From the first week in March two of the B.O.A.C. services to the Middle East will call at Zurich in addition to their other points of call. This will be the first time that B.O.A.C. has operated through Switzerland. The services on Saturdays from London Airport to Cairo will make intermediate stops at Zurich and Rome. The first dates of operation via Zurich will be March 2 for the Bahrain service and March 3 for that to Cairo. The flight from London to Zurich is scheduled to take 2½ hr. and the fares between these two points will be £30 9s. return and £16 18s. single.



Unloading a C.F.A. 4-6-0 steam locomotive in the docks at Algiers

Gantry for Unloading Locomotives in Melbourne

A crane specially designed and built in four months in the United Kingdom for lifting 120 locomotives, 70 of which weigh 97½ tons each

THE Victorian Government Railways placed an order some time ago with the North British Locomotive Co. Ltd. for 120 steam locomotives, 50 being Class "N" 2-8-2s and 70 Class "R" 4-6-4s; the latter weigh 97½ tons without their tenders. An illustrated article on the Class "N" locomotives appeared in our December 8, 1950, issue. As they are urgently required, the engines are being shipped almost as fast as the builders can turn them out, complete in every respect, as deck cargo. No facilities existed at Melbourne for handling such loads, and the rapid shipment and unloading of these engines presented a difficult problem.

One difficulty was the necessity for limiting the cost of whatever unloading facilities were provided to a figure covered by the freight charge on the locomotives. The use of sheer legs was ruled out by the conditions imposed by the port authority and considerations of time precluded the provision of a standard 100-ton crane. Financially, the chartering of special vessels equipped for unloading heavy locomotives with their own lifting gear would have proved feasible, but in this instance, rapid delivery in the form of a regular flow of small consignments at frequent intervals was preferred.

The method eventually adopted was to ship the locomotives, four or six at a time—depending on deck space—by the regular services of Alfred Holt and Shaw Savill Lines, and to provide a travelling gantry crane on Nelson pier at Williamstown (Melbourne) to unload them, and at the same time comply with port requirements. The latter demanded the longitudinal movement of the gantry along the pier, and the distribution of the weight of the loaded gantry over at least 48 of the timber piles supporting the pier.

Another stipulation made was that the outboard cantilever lifting arms of the structure had to be retractable or folding, to be clear of shipping when not in use. The task of designing, fabricating and erecting such a gantry meeting all requirements and ready for testing within four months could not be undertaken by normal methods, and called for rapid and expert design of the highest order, coupled with a distribution of the work of fabrication over several firms.

Rapid Construction

Sir Bruce White, Wolfe Barry & Partners, the consulting engineers, who in the autumn of 1949 had already evolved a general design acceptable to the Melbourne Harbour Trust, undertook to prepare the detail designs of the gantry structure and its complete equipment, so that time could be saved by placing orders for the manufacture of the various parts—which were of original

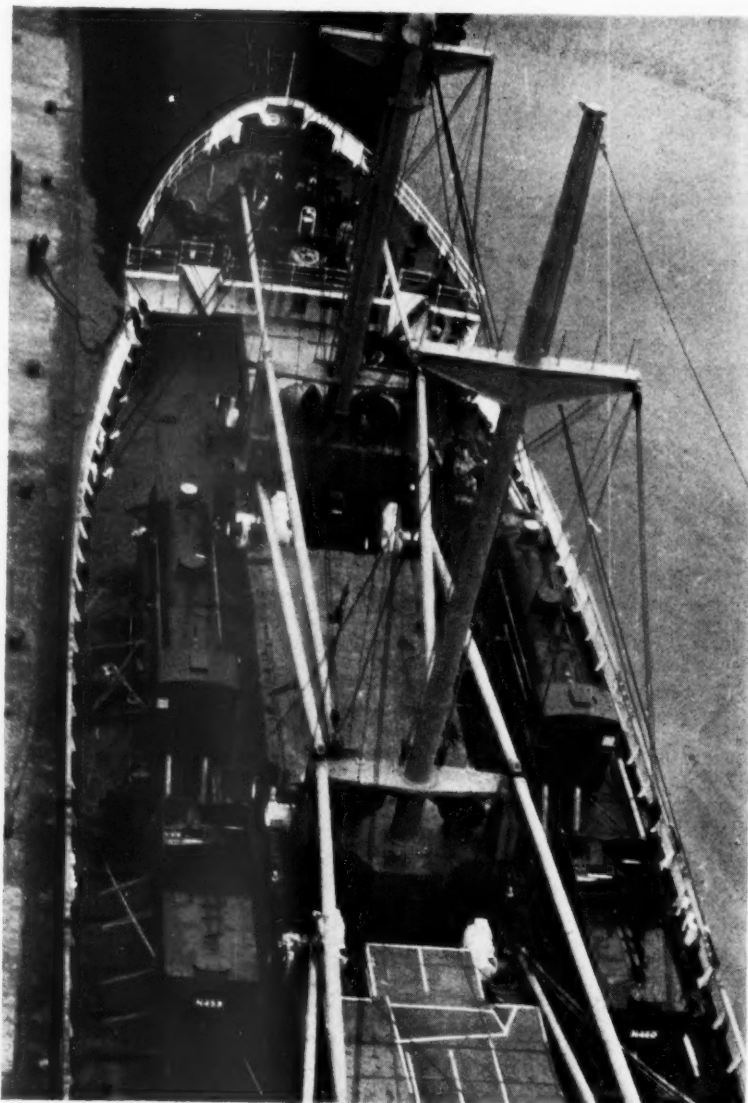
design—with three principal firms, Alexander Findlay & Co. Ltd., William Bain & Co. Ltd., and the Clyde Crane & Engineering Company.

So satisfactory did this arrangement prove that the consulting engineers, who had received the drawings of the pier only in September, 1949, had completed the detail working drawings of the gantry and its complicated electrical and mechanical parts by the end of October. All the structural and mechanical parts were delivered by the firms ready for erection and testing by February 1, 1950, or within three months.

The erection, testing and dismantling

was carried out at the works of Sir William Arrol & Co. Ltd., Glasgow, including an overload test of 110 tons, and the gantry was shipped during March. After re-erection and a second testing in Melbourne, the gantry was ready for lifting the first two "N" class engines on June 18, 1950. Thus, by adopting methods initiated during the war to expedite construction, this gantry and its equipment were completed in what, for peacetime, is probably record time.

To distribute the weight of the gantry and its 100-ton load along the pier, it is carried by two duplex N-truss spreader



Two "N" class locomotives forming part of the deck cargo in liner before unloading at Melbourne Docks

girders, each 65 ft. long and 8 ft. deep, spaced at about 32-ft. centres to suit the spacing of existing rail tracks. Between the twin trusses of each girder are four pairs of wheels running on the same rail, with four hydraulic jacks above them. When the gantry is to be moved along the pier, the jacks are pumped up, and lift the girders from the pier deck, so that the wheels take the load; a locomotive is used to tow the structure. At other times, folding wedges support the girders on the pier deck transoms ready for lifting.

Integral with and extending upwards from each spreader girder are two columns carrying the superstructure and craneway which is 48 ft. 6 in. above the pier deck. The columns on the front spreader are stiffened in the direction parallel to the pier with outrigger bracings; this allows a clear movement of the load between these columns. Transversely to the pier each pair of front and back columns is braced as shown in the side elevation, and the two back columns are braced with a lattice tie girder.

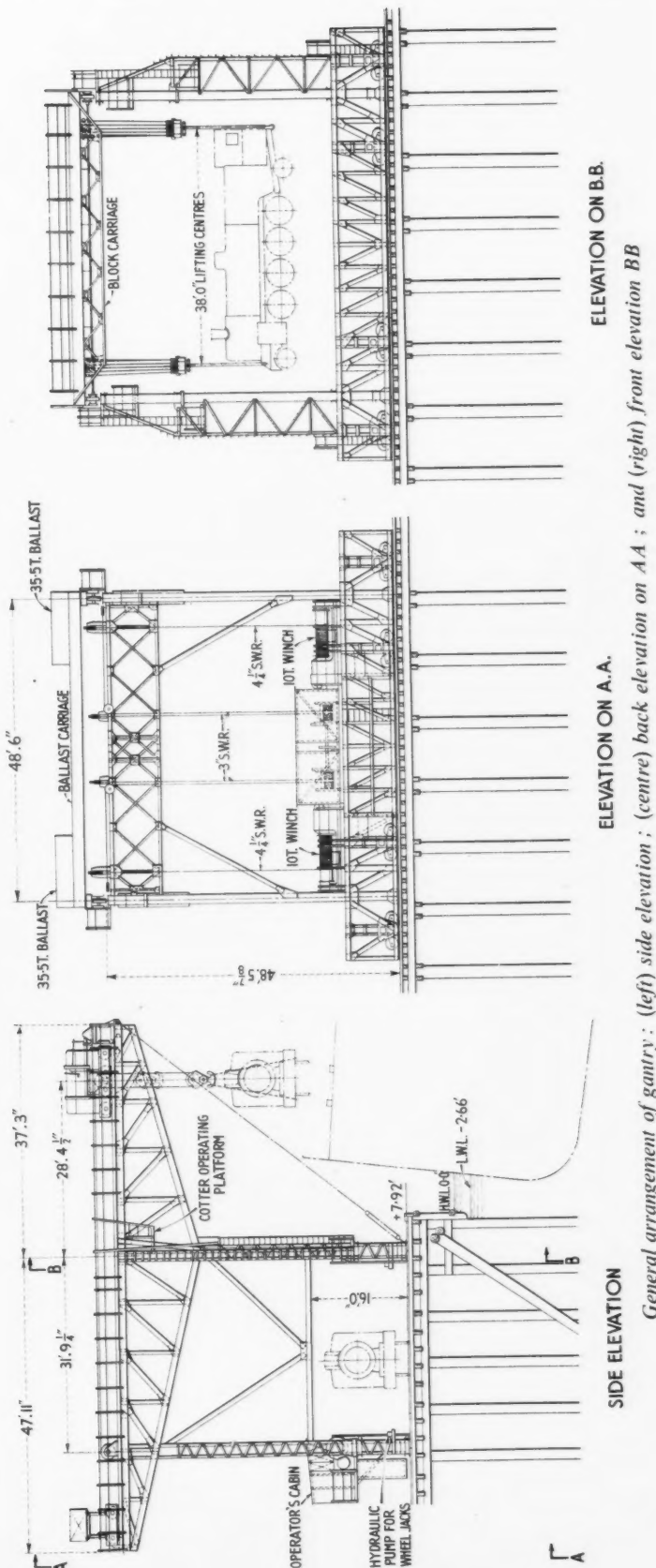
Cantilever girders carrying the crane-way project from the front columns some 37 ft. over the ship's deck when in use. At other times they can be folded back, one over the other, flush with the pier face, to avoid obstructing other vessels coming alongside or ships being warped along the pier. For this reason the cantilevers are hinged vertically to the tops of the columns; the hinges are locked mechanically with cotters in such a way that the block carriage cannot move on to the hinged part of its runway until the cotters are in place to prevent radial movement of the cantilevers. A movable front tie girder, linking the outer ends of the cantilevers, is raised from and lowered into place by hand lifting gear on the block carriage, and is also locked with pins and cotters.

Hoists and Block Carriage

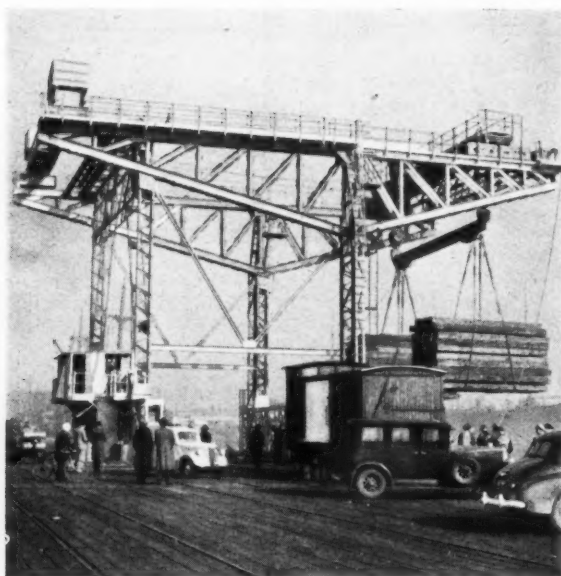
Two spare 10-ton Wilson electric winches, standard on the Holt Line ships, were used for the main hoists; their cables were arranged so that the block carriage may be moved backwards without causing the load to rise or fall, and so that there is no tendency for the tension in the lifting cable to form a horizontal drag on the block carriage. The latter is traversed with the aid of motorised hand winches, which, like all other winches and controls, are housed on the back spreader girders. Some 70 tons of ballast are carried in a ballast carriage, which is coupled up to the block carriage and towed or propelled by it when it has to be moved. For outboard lifting it is run backward to the full extent of the back cantilevers and craneway, but when the gantry travels along the pier it has to be moved to the centre of the gantry, otherwise there would be excessive loading on the back wheels and piles.

To suit the points of lift on both types of locomotive as closely as possible, the hoisting centres are fixed 38 ft. apart. The horizontal distance through which

(Continued on page 221)



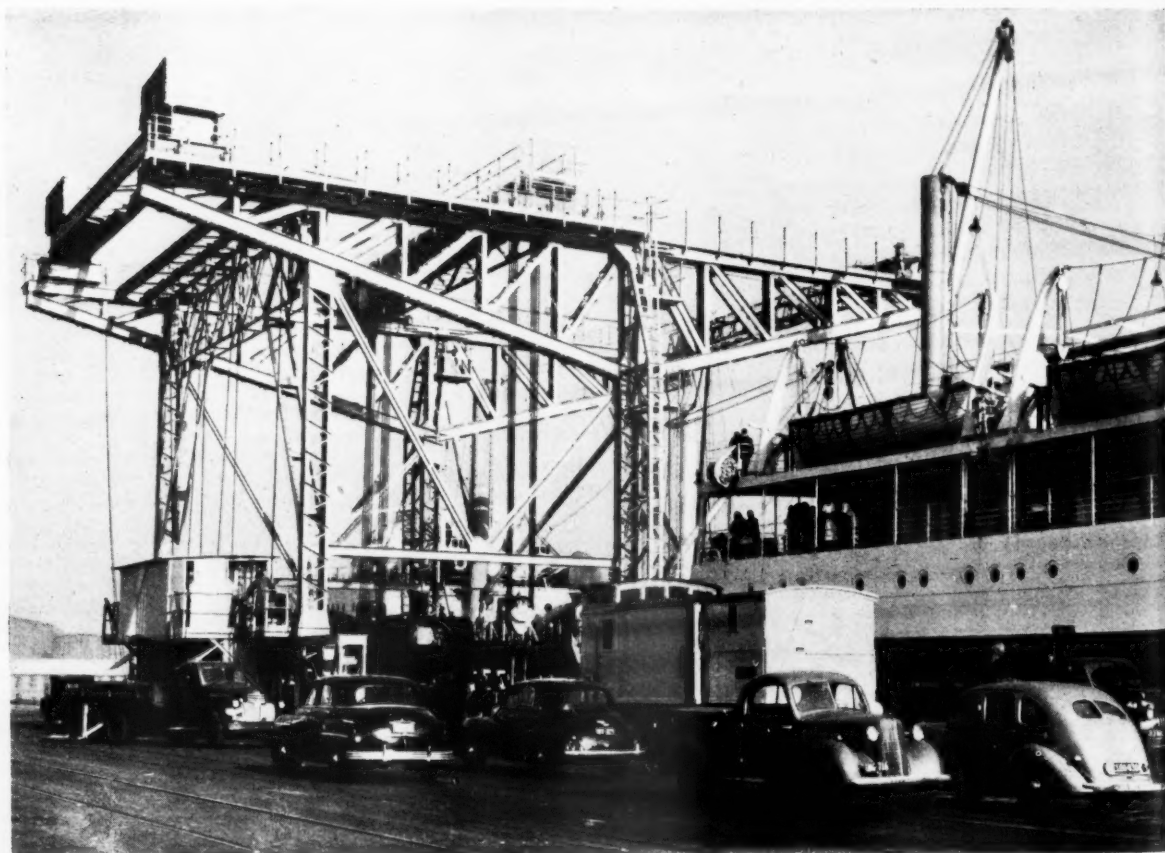
Gantry for Unloading Locomotives in Melbourne



Gantry undergoing second test after erection on Nelson Pier, Melbourne. The test load in this case consists of hardwood timbers



Gantry lifting "N" class engine from deck of vessel. Note the hinged cantilever girders with light detachable tie girder between them



Gantry after lowering locomotive to track. The white railway vehicle in the foreground is the travelling transformer and motor generator, and the winch and control housing can be seen on the rear spreader girder

RAILWAY NEWS SECTION

PERSONAL

BRITISH TRANSPORT COMMISSION

The Minister of Transport has announced that Mr. Frank Aubrey Pope, C.I.E., M.Inst.T., has accepted his invitation to become a full-time Member of the British Transport Commission. Mr. Pope is at present Chairman of the Ulster Transport Authority, and the Government of Northern Ireland has been consulted; he will

30); in 1932 and 1933 he twice visited India, when his services were lent to the Government of India as Chairman of a committee appointed to recommend measures for achieving greater efficiency and economy on the Indian railways. He went to India again in 1944-45 as Regional Port Director, Calcutta, and was made a C.I.E. in June, 1945. Towards the end of 1947 Mr. Pope relinquished his position as a Vice-President of the L.M.S.R. on

Wilson, Hennessey and Crawford, chartered accountants, of Belfast, and formerly Auditor of the Northern Ireland Road Transport Board and of the Belfast & County Down Railway. In February, 1949, he was appointed a Member of the Transport Tribunal for Northern Ireland, but subsequently resigned for health reasons.

Mr. H. P. Barker, M.I.E.E., M.Inst.Gas E., who, as recorded in our January 26 issue,



Mr. F. A. Pope

Appointed a full-time Member of the British Transport Commission



Mr. H. P. Barker

Appointed a part-time Member of the British Transport Commission

take up his new appointment on a date to be arranged. He was educated at The Leys School, Cambridge, and joined the L.N.W.R. in 1910. The principal appointments he had held with the L.M.S.R. up till his appointment in 1946 as a Vice-President were: Superintendent of Operation (1938-40); Manager, Northern Counties Committee, Belfast (1941-43); and Chief Commercial Manager (1943-46). He served with distinction in both World wars, attaining the rank of Major during his service in France and with the Salonika Force during that of 1914-18, when his awards included a mention in dispatches, the Greek Order of Merit, and the White Eagle of Serbia. In 1940 he was appointed Director of Railways, B.E.F., with the rank of Colonel. He was again mentioned in dispatches. After the evacuation from France he returned to the L.M.S.R. In his considerable overseas transport experience, Mr. Pope has held appointments as Divisional Superintendent and as Acting Superintendent of the Line, Nigerian Railway (1925-

accepting an invitation to become a member of the Northern Ireland Road Transport Board, of which he was designated Chairman from January 1, 1948, and he became Chairman of the Ulster Transport Authority later in the same year. He was Chairman, Northern Ireland Section, Institute of Transport, for 1948-49.

The King, on February 14, at Buckingham Palace, conferred the honour of Knighthood upon: Mr. Edward Dave Asher Herbert, O.B.E., M.I.Mech.E., M.I.E.E., Chairman, Short Bros. & Harland Limited, Belfast, and Director, Cowans, Sheldon & Co. Ltd.; Colonel Victor Dunn Warren, M.B.E., T.D., A.M.I.Mun.E., Lord Provost of Glasgow, and Regional Manager, Scotland & Northern Ireland, Imperial Chemical Industries Limited; and Mr. Reginald Holmes Wilson, Comptroller, British Transport Commission.

We regret to record the death of Mr. J. O. Wilson, a partner in the firm of Messrs.

has been appointed a part-time Member of the British Transport Commission, was born in 1909 and educated at Oundle School. He served a full mechanical engineering apprenticeship with Waygood-Otis Limited and concurrently studied electrical engineering, law, and accountancy. After several years as a Consulting Mechanical & Electrical Engineer, he joined the Parkinson & Cowan group of companies, in 1937. Mr. Barker was loaned to the Ministry of Aircraft Production in 1940, but was released by the Minister in 1944. He returned to Parkinson & Cowan Limited as Group Engineering Director and in 1946 became Managing Director. Mr. Barker has travelled extensively in Europe and North America, and he is also a member of the National Hospitals Board.

We regret to record the death of Mr. F. W. Attock, who retired from the position of Divisional Superintendent of Motive Power, Manchester, L.M.S.R., in 1935.



Mr. Graham Tunbridge

Appointed Estate & Rating Surveyor,
Southern Region



Mr. D. L. Pride

Appointed District Operating Superintendent,
Birmingham District, Western Region



Mr. E. E. Cowell

Appointed District Operating Superintendent,
Sunderland, North Eastern Region

Mr. Graham Tunbridge, F.R.I.C.S., Estate Surveyor, North Eastern Region, who, as recorded in our February 2 issue, has been appointed Estate & Rating Surveyor, Southern Region, was educated at Berkhamstead School, and at Christ's College, Brecon. During the first World war he was gazetted to the 4th Welsh Battalion from the Inns of Court O.T.C., and in 1919 he was articled to his father, the late Borough Estate Surveyor & Valuer, Swansea. Mr. Tunbridge became an Associate of the Royal Institution of Chartered Surveyors in 1929 and a Fellow in 1935. He joined the Directorate of Lands & Accommodation, H.M. Office of Works, in 1927 and took over private practice in London in 1929. He was appointed Estate Surveyor of the North Eastern Area of the L.N.E.R. in 1944 and since nationalisation has been Estate Surveyor, North Eastern Region, British Railways.

We regret to record the death of Mr. Kurshed Lal, Deputy Minister of Communications in the Government of India.

M. Edouard Bonnefous, President of the Foreign Affairs Commission of the French National Assembly, has been elected President of the Transport Commission of the Council of Europe.

We regret to record the death of Mr. H. Collier, Chief Electrical Engineer of the Eastern Bengal Railway.

Mr. H. E. Hill has resigned from the board of British Moulded Plastics Limited and the boards of associated companies.

We regret to record the death on February 20, at the age of 79, of Mr. W. H. McAlpine, Chairman of Sir Robert McAlpine & Sons, Ltd.

Mr. E. McClelland, Assistant to the District Operating Superintendent, Newcastle, has been appointed Assistant District Operating Superintendent, Sunderland, North Eastern Region.

It was recently notified in *The London Gazette* that the King has appointed Mr. W. M. Codrington to be his Majesty's

Lieutenant of and in the County of Rutland, in the room of the Earl of Ancaster, who has resigned.

We regret to record the death on February 14, at the age of 63, of Mr. G. A. V. Connolly, Senior Solicitor Assistant, British Transport Commission.

Mr. D. L. Pride, District Operating Superintendent, Birmingham (Western), London Midland Region, who, as recorded in our February 9 issue, has been appointed District Operating Superintendent, Birmingham District, Western Region, joined the former Midland Railway in 1915. After occupying posts at Skipton and Cudworth he went to the Chief General Superintendent's staff office at Derby in 1922, and became a member of the relief staff in that area in 1925. Mr. Pride was later appointed District Signalmen's Inspector at Kirkby-in-Ashfield, and subsequently filled similar positions at Lancaster Castle, Heaton Norris and Nuneaton; he was transferred to Birmingham (New Street) as Passenger Train Inspector in 1936. In 1942 he was appointed Assistant District Controller at Bletchley, and moved to Birmingham (Western) in a similar capacity two years later. When the new L.M.S.R. operating organisation was brought into force in March, 1945, he became Assistant to the District Operating Manager, Birmingham. He was appointed Assistant District Operating Manager, Nottingham, in June, 1948, but returned to Birmingham (Western) as District Operating Superintendent, in November of the same year.

Mr. J. Sulston has been appointed Deputy Signal Engineer to the Siemens and General Electric Railway Signal Co. Ltd.

Mr. E. E. Cowell, Assistant District Operating Superintendent, York, North Eastern Region, who as recorded in our February 9 issue, has been appointed District Operating Superintendent, Sunderland, joined the L.N.E.R. (Southern Area) as a clerk in the Goods Commercial Department at Norwich in 1924. Following an examination he became a traffic apprentice

and went to the North Eastern Area for training in 1932. In 1936 he was appointed Chief Clerk to the Docks Superintendent, Western Docks, Hull. Mr. Cowell became Chief Passenger Trains Clerk, District Superintendent's Office, Darlington, in 1937, and Deputy Chief Controller in the same office in 1941. He was appointed Deputy Chief Controller, Central Control, York, in 1943, and became Head of Superintendent's, Passenger Manager's, & Locomotive Running Superintendent's Joint Passenger Trains Section, York, in 1944. Two years later he was appointed Head of Superintendent's & Locomotive Running Superintendent's Joint Works & Outdoor Section, York, and became Assistant District Operating Superintendent, York, in 1948.

Mr. Harry B. Terry has been appointed Manager, Harlesden branch, Thos. Cook & Son Limited.

Mr. Robert A. Harris, Assistant Improvement Engineer, has been appointed Chief Improvement Engineer in the production department of the American Car & Foundry Company.

We regret to record the death on February 17, at the age of 79, of Mr. Harry Parsons, J.P., M.I.Mech.E., Chairman of Parsons Engineering Co. Ltd., and Chairman of Southampton Harbour Board from 1923 to 1944.

LONDON MIDLAND REGION APPOINTMENTS

The following staff changes have been announced by British Railways London Midland Region:—

Mr. E. Stanley, Works Superintendent, Earlestown Works, to be Assistant Carriage & Wagon Engineer, Derby headquarters.

Mr. S. Hancock, Assistant District Motive Power Superintendent, Wakefield, North Eastern Region, to be District Motive Power Superintendent, Blackpool.

Mr. P. Gray, Assistant to Locomotive Works Manager, Gorton, to be Carriage & Wagon Works Manager, Gorton.

Mr. J. Bentley, Acting District Fire Superintendent, Bradford, North Eastern Region, to be Regional Fire Officer, Euston.

We regret to record the death on February 15 of Mr. Adam Wilson, C.B.E., J.P., late Chairman, Nobel Division, Imperial Chemical Industries Limited.

Mr. F. J. Welch has joined the Sales Promotion Department of C.A.V. Limited. He had formerly been Advertising & Publicity Manager with Jack Olding & Co. Ltd.

We regret to record the death on February 15, at the age of 93, of Mr. F. Hudleston, J.P., a former civil engineer associated with the building of the Central London Railway.

We regret to record the death on February 18, at the age of 74, of the Rt. Hon. Sir James Andrews, Bt., Lord Chief Justice of Northern Ireland, who, for several years at the beginning of the century, was standing counsel to the Great Northern Railway (Ireland) and the Belfast & County Down Railway, and the Belfast Harbour Commissioners.

Gantry for Unloading Locomotives in Melbourne

(Concluded from page 217)

the load can be traversed from the farthest point on the ship's deck to the central unloading track straddled by the gantry is approximately 45 ft. 6 in., 28 ft. 3 in. in front of and 17 ft. 3 in. behind the line of the front columns.

Because of the nature of the pier, both travelling and static loads had to be carefully assessed and distributed. Gantry and ballast together weigh about 250 tons, and the load on each of the 16 wheels when travelling averages about 15½ tons. When a locomotive is slung outboard the maximum front-column load is some 138 tons, so that the distributed load under the front spreader girder is about 4 tons per ft. run, and the load per pile is 21 tons. The maximum pile load is, however, 29 tons under the rear spreader girder when a locomotive is slung between the columns.

Electrical Locking Gear

Though the block carriage is prevented from moving out on to the hinged cantilevers before their securing cotters are in place by a mechanically operated stop, there is an elaborate system of electrical safety interlocking in addition to the normal overwind limit switch. Two other limit switches prevent outboard lifting (a) until the cotters locking the front tie girder are in place, and (b) unless the ballast carriage is at the extreme backward limit of the craneway. Two more prevent the block carriage from approaching within 6 in. of the front tie, and traversing backwards beyond the unloading rail track. High-tension alternating current is led in by cable to a railway travelling transformer and motor generator drawn up beside the gantry, as seen in the illustrations on page 218. This vehicle supplies direct current power to the gantry. The total cost of the gantry is given as about £35,000.

Canadian Railway Club Dinner

Appeal for harmony between management and labour

The 43rd annual dinner of the Canadian Railway Club was held in Montreal on February 2, under the joint chairmanship of Mr. R. C. Johnston, President of the Club and Assistant Vice-President, Personnel, Canadian National Railways, and Mr. John Eaton, First Vice-President of the Club and General Purchasing Agent, Canadian Pacific Railway.

In proposing the toast of the railways, Mr. Johnston said that the railways were proud of their past achievements and viewed the future with confidence. "The Canadian railways have become so integral a part of our everyday life," he continued, "that there is a general tendency on the part of many to take them for granted." He was sure that all present recognised the railways as indispensable public servants. They saluted them for their magnificent work in uniting Canada.

Mr. M. A. Metcalf, Vice-President & Executive Assistant, C.N.R., and Mr. N. R. Crump, Vice-President, C.P.R., replied. Mr. Metcalf thought that no disagreements between labour and management in the railway industry should be permitted until the quarrel with those who sought to change the way of life of both was settled. Mr. Crump said that road transport had either taken away their traffic in highly-rated finished products or forced them drastically to reduce their rates for this traffic. Only when road transport was regulated similarly to the railways would the consignor be able to send his goods by the means of transport which would give him the type of service he sought, with full knowledge of the factual cost.

Retired Railway Officers' Society

At the Great Eastern Hotel, Liverpool Street Station, on February 13, the fiftieth annual report of the Retired Railway Officers' Society was submitted by Alderman W. T. Venton, retiring President. The first meeting was held on November 12, 1901, so that this is the jubilee year of the Society.

The report stated that during the past twelve months 17 new members were elected, but eleven members had died, and there was one resignation. The total membership had, therefore, increased from 170 to 175, of whom 161 are ordinary members, nine are life members, and five honorary members. The monthly meetings were well supported, and a feature of these meetings was the interesting addresses given by public men, railway officials, and others. The social activities, consisting of the autumn luncheon, the ladies' tea, and musical entertainment, and the annual excursion—this time to the Isle of Wight—proved even more popular.

One of the Joint Auditors, Major A. S. Mills, presented the statement of accounts, which showed a cash balance of £71 19s. as against £118 5s. 10d. This was due to various items strictly belonging to the previous year being included in the accounts.

A special sub-committee consisting of a member from each of the previous four groups was set up to nominate a President for the ensuing year. Their choice fell on Major A. S. Mills, at one time District Goods Manager (London) of the former

Great Western Railway, who was elected unanimously. Major Mills acted as Hon. Secretary of the Society for ten years.

The retiring Hon. Treasurer, Mr. J. W. Lovejoy, and the Hon. Secretary, Mr. F. E. Cox, who expressed their willingness to serve again, were unanimously re-elected, and Messrs. J. H. Laundy and H. B. Webster were appointed Hon. Joint Auditors. Mr. E. B. Hassall proposed a vote of thanks to the retiring President, Alderman W. T. Venton, and the officers of the Society for their services during the past year.

INCREASED CHARGE FOR HIRE OF RAILWAY GRAIN SACKS.—Because of the rise in the cost of sacks, materials, and maintenance, the hire and demurrage charges made by British Railways for the use of grain sacks are to be increased. At present these charges are still at their pre-war level. As from March 1 the charge for the hire of empty sacks will be 1½d. a sack for a period not exceeding seven days, including dates of hire and return of sack. If sacks, when full, are forwarded by British Railways transport, a further 14 days will be allowed. After the above periods a charge of 1d. a sack per week or part of a week will be made. For sacks not returned after hire, 10s. a sack will be charged to stay hire in addition to any other charges due. A stock of approximately 5,000,000 sacks is maintained by the Eastern, London Midland, North Eastern, and Scottish Regions for hire to farmers and others.

MOND NICKEL FELLOWSHIPS FOR 1951.—Applications are now invited for the award of Mond Nickel fellowships for 1951. The main objects of these fellowships is to enable selected applicants of British nationality and educated to university degree or equivalent standard to obtain additional training and wider experience in industrial establishments at home or abroad so that they will be better qualified to appreciate the technological significance of metallurgical research and to apply its results. There is no age limit, though awards will seldom be made to persons over 35 years of age, and each fellowship will occupy one full working year. It is hoped to award five fellowships each year of an average value of £750 each. Full particulars can be obtained from the Secretary, Mond Nickel Fellowships Committee, 4, Grosvenor Gardens, London, S.W.1, and completed forms must reach the Secretary not later than June 1.

INDIAN RAILWAYS TRAFFIC AND EARNINGS INCREASE.—The Indian railways set up new records in traffic and earnings during 1949-50, according to the latest Railway Board Annual Report. Events of importance during the year were the completion of the Assam rail link project, and the inauguration of the Chittaranjan Locomotive Works in West Bengal. The earnings of State-owned and other railways during 1949-50 were Rs.2,583,100,000, consisting of Rs.1,357,000,000 derived from goods traffic, Rs.952,300,000 from passenger traffic, and Rs.273,800,000 from parcel, luggage, and other sources of revenue. The number of passengers carried on the Indian railways during the year increased from 1,184,510,000 to 1,254,540,000. The capital at charge at the end of 1949-50 stood at Rs.8,129,000,000 on all Indian railways, including lines under construction. Capital expenditure during the year on all railways was Rs.373,900,000.

British Transport Commission Statistics (Period No. 13)

Summary of the principal statistics for the four-week period ending December 31

STAFF

	B.T.C. Head Office	British Railways	London Transport	British Road Services (Road Haulage)	Road Passenger (Provincial & Scottish)	Hotels & Catering	Ships & Marine	Inland Waterways	Docks, Harbours, Wharves	Railway Clearing House	Commer- cial Adver- siment	Legal	Films	Total
Number ...	240	605,455	98,097	75,540	59,196	17,574	6,141	5,000	18,892	664	208	275	29	88,311
Inc. or dec.	-1	-2,578	-136	-3	-348	-104	+26	-3	-186	+6		-3		-2318

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

	Four weeks (Period No. 13)		Aggregate for 52 weeks	
	To Dec. 31, 1950	To Dec. 31, 1949	1950	1949
	£000	£000	£000	£000
British Railways —				
Passengers	7,969	8,108	106,510	113,713
Parcels, etc., by passenger train	2,364	2,150	30,847	28,953
Merchandise	6,612	5,596	86,143	79,558
Minerals	2,520	2,245	32,534	29,629
Coal & coke	5,966	5,115	77,683	67,856
Livestock	137	108	1,838	1,467
	25,568	23,322	335,555	321,176
British Railways — C. & D. and other road services	720	651	9,539	8,612
Ships & Vessels	611	611	10,732	10,600
London Transport —				
Railways	1,210	1,113	14,635	14,379
Buses & coaches	2,234	2,270	30,744	31,251
Trams & trolleybuses	760	809	10,514	10,906
	4,204	4,192	55,893	56,536
British Road Services — Freight charges, etc.	4,793	4,114	62,481	37,777
Road Passenger Transport	2,577	2,319	37,979	35,101
Docks, Harbours & Wharves	930	895	11,947	11,202
Inland Waterways	113	111	1,622	1,520
Hotels & Catering	1,116	990	14,519	13,245

LONDON TRANSPORT

	Passenger journeys	Inc. or dec. per cent. over 1949	Car miles	Inc. or dec. per cent. over 1949
Railways	000		000	
Buses & coaches	47,382	3.1	17,003	1.3
Trams & trolleybuses	195,180	4.2	23,317	2.0
	75,494	14.2	7,722	6.9
Total	318,056	6.6	48,042	0.7

INLAND WATERWAYS Tonnage of traffic and ton miles

	Tonnage	Inc. or dec. per cent. over 1949	Ton miles	Inc. or dec. per cent. over 1949
Coal, coke, patent fuel & peat	000		000	
Liquids in bulk	402	9.7	5,303	15.9
General merchandise	141	5.6	3,704	12.3
	386	31.6	4,428	4.3
Total	929	6.5	13,435	5.6

BRITISH RAILWAYS Rolling Stock Position

	Operating stock	Number under repair	Available operating stock	Serviceable stock in 1949
Locomotives	19,053	3,079	15,974	16,101
Coaching vehicles	58,121	5,026	53,095	51,437
Freight wagons	1,104,999	73,958	1,031,041	1,020,069

BRITISH RAILWAYS Passenger Journeys (Month of November, 1950)

Full fares	Monthly returns	Excursions, cheap day, etc.	Other descriptions	Workmen	Season tickets	Total	Inc. or dec. per cent. over 1949
5,314,000	8,144,000	16,403,000	3,306,000	19,252,000	18,830,000	71,249,000	

BRITISH RAILWAYS Freight Tonnage Originating and Estimated Ton-Miles (Period No. 13)

	Minerals	Merchandise	Coal & coke	Livestock	Total	Inc. or dec. per cent. over 1949
Tons originating	000	000	000	000	000	
Ton-miles	4,501	3,817	12,179	55	20,552	3.9
	360,661	487,257*	727,887		1,575,805	3.8

* Includes livestock

BRITISH RAILWAYS (Period No. 13)

	Total steam coaching train-miles	Total electric coaching train-miles	Total freight train-miles	Freight train- miles per train engine-hour	Net ton-miles per total engine-hour	Locomotive coal consumption	
						Total tons	Lb. per engine-mile
	14,184,000	3,585,000	9,984,000	7.36	529	1,078,000	67.01
Inc. or dec. per cent. over 1949	-0.1	+1.5	-2.5	-5.6	-4.7		+1.3

Staff & Labour Matters**Railway Wages and Salaries***Summary of findings and recommendations of the court of inquiry: trade union opposition to the report*

Last week we referred briefly to the recommendations of the court of inquiry set up by the Minister of Transport to report on the wages and salaries applications by the three railway trade unions and the offer made by the Railway Executive in November last year. These recommendations follow in general the lines of the Railway Executive offer and the cost of the proposed increases is estimated at about £7,000,000 a year. The court considers that the advances in wages and salaries which it recommends are the maximum within the capacity of British Railways to pay without imposing intolerable financial burdens.

Problem of Relativity

The report states that it cannot be contested that wage rates in a number of important industries, especially in coal-mining and agriculture, have increased since 1939 in a much greater proportion than in the railways. But it must be remembered that in these two cases, they were dealing with industries that had been undermanned, and in respect of which it had been a matter of national policy to raise their relative position in the wage hierarchy as a whole. The success of such a policy partly depended on their maintaining this differential advantage, and they might well be deprived of this, if other industries sought to justify wage claims by reference to what had taken place in these cases.

While the conditions of pay on the railways could be held to compare unfavourably with those in certain other industries, especially those in which piecework, overtime, and so on, yielded high average earnings, there were also industries in which the comparison would work the other way. The principle of relativity did not provide any secure criterion by means of which a decision could be reached as to the correct basis of comparison between industries. The relativity between one industry and another could not in practice be confined to the consideration of basic rates only, as it also involved the question of actual earnings.

The reduction of the normal hours of working on the railways from 48 to 44, which resulted from the recommendations of the court of inquiry in 1947, had the effect of increasing earnings substantially without adding to the number of hours worked, which of itself was an important reason for the fact that the recommendations of that court added in the first instance as much as £26,000,000 to the annual wage and salary bill. It does, however, remain a significant fact, states the report, that the average earnings of the adult male workers in the conciliation grades of the railways in April, 1950, were 135s. 9d. as compared with an average figure of 145s. 9d. for a wide range of other industries taken together. There could be no question that the high earnings obtained by workers in other industries had created an undesirable feeling of discontent among many of those employed on the railways.

When the former court was set up in June, 1947, both sides were recommended to get together and to work out a more satisfactory system of differentials, which would increase the incentive to those in the upper grades to accept promotion and

would recompense more fairly their skill and responsibility. In making its recommendations the court had hoped that the increase of 7s. 6d. proposed at that time would mark the last of the general flat-rate increases on the lines of wartime.

One moral which the court draws is the impossibility of reconciling, in a period of rising prices and cost of living, the natural desire to cushion the lower-paid workers as much as possible against reductions in their standard of living, with the need for improving the relativity between the lower and the higher grades, which had been impaired as a result of the movement of wages since 1939. Each of these was, within reasonable limits, a legitimate objective of trade union policy, but both could not be achieved simultaneously under existing conditions, except at an altogether prohibitive cost. It was, however, abundantly clear that the divergent and sometimes conflicting policies pursued by the three unions had imposed an almost impossibly difficult task on the Railway Executive in coming to an equitable and mutually satisfactory settlement on wages and conditions of labour relating to its staff as a whole.

The report outlines the proposals of the Railway Executive for improving efficiency, and details the problems affecting vanguards, calling of trainmen, and lodging turns. Reference is also made to the wage and grading proposals which are an integral part of the general programme for securing greater working efficiency. The report states that these proposals, besides yielding substantial financial advantages to many of those hitherto placed in the lower grades, provided for interchangeability of working between those who would be grouped together under a single standard rate. This would diminish the complexity of the present system and enable the Railway Executive to make better use of the men under their new designations.

The report adds that there is no difference in principle between the Railway Executive and the unions as to the desirability of taking all appropriate measures to increase the efficiency and economical working of the railways. The N.U.R. did not oppose the withdrawal of vanguards and the A.S.L.E. & F. objections to the abolition of calling of trainmen appeared to be mainly based on the unwillingness of their members to relinquish a service they value.

Conclusions and Recommendations

In reviewing the problem in the light of all the evidence the court says it is of great significance that, as recently as September, 1949, a specially appointed board of conciliation, whose recommendations both parties had agreed beforehand to accept, should have found that neither a flat-rate increase nor any increase in wages and salaries was justified at that time. The situation now differed, however, in at least two material respects from that with which the board was confronted some 18 months ago.

First, instead of a single claim by the N.U.R. for a flat-rate increase of 10s., there were three differing claims for percentage increases. Second, in contrast with the position in July, 1949, the Railway Executive had put forward a counter-offer of wage advances. This offer, which took

into account the graduated increases granted to the lower grades by the award of the Railway Staff National Tribunal of August 15, 1950, would raise wage and salary rates for virtually all the staff of the railways covered by the present claims.

The court had examined with the greatest care and very sympathetically the submissions put forward by the representatives of the three railway unions. Having regard, however, to the financial position of British Railways, and to all the other relevant considerations, the court did not feel able to recommend the adoption of any of these claims. The offer made by the Railway Executive was considered to represent a genuine and constructive attempt to improve the relative position of railway workers, both with regard to those employed in outside industries, and to the differentials between the lower and higher grades in the railways. The consolidation of many existing grades into new standard grades, carrying with it the interchangeability of duties amongst all those within each grade, constituted a reform which not only in many important respects met long-standing wishes of the unions, but conferred substantial financial advantages on many of those workers who were upgraded, while it should also contribute to more economical and efficient working.

Modifications

It is recommended that the offer of the Railway Executive be accepted subject to the following modifications:—

(a) that the rates for salaried staff in special categories "A" and "B" shall be increased by £30 a year and the rates for salaried staff in special category "C" by £35 a year instead of the increase of £25 a year for all three categories proposed by the Railway Executive;

(b) that the rates for signalmen in special classes "A" and "B" shall be increased by 9s. 6d. a week, instead of the increase of 7s. a week proposed; and

(c) that the rates for engine drivers and motormen in the highest grade shall be increased by 10s. 6d. a week, instead of the increase of 7s. a week proposed.

In making these recommendations in respect of certain of the highest grades of the salaried staff, signalmen, and engine drivers and motormen, the court has been influenced by the importance which, in common with the unions, it attaches to widening, as much as is practicable in all the circumstances, the differentials between the top and bottom grades—a principle which lies in general at the basis of the Railway Executive proposals. It is pointed out, however, that, owing to the large number of men in the highest grade of drivers and motormen (32,750 out of a total of 42,500) this amendment will increase the cost to British Railways of its offer by some £350,000 a year in respect of this item alone.

After having subjected to a careful examination the proposals of the Railway Executive relating to modification in working arrangements which would make for the more efficient and economical utilisation of railway staff the court comes to the unanimous conclusion that there is an overwhelming case for their adoption and states in its report: "We do not believe that the Railway Executive could properly have assumed the responsibility

of putting forward its own proposals for wage and salary increases, unless it had been able at the same time to envisage ways and means whereby the additional cost to British Railways could be met, either in whole or in part. Nor would we have felt justified in recommending these proposals at the present time (with some modifications in an upward direction) if they had not been linked with positive measures designed to eliminate avoidable and unnecessary costs: as it is, they are in the nature of an advance or mortgage on economies to be effected in the future."

"We are fully aware," continues the report, "of the objections on constitutional and procedural grounds felt by the unions to the precise form and timing of the conditions associated by the Railway Executive with its wage offer. These strongly held objections were partly responsible for the breakdown of the negotiations between the unions and the Railway Executive. It is, however, important that considerations of this order should not be allowed to obscure the fundamental realities of the situation, which are, in our opinion, that British Railways are not in a position to pay larger wages and salaries unless substantial and progressive economies can be achieved in the working of the railways."

Proposed Working Changes

The court recommends that the following changes in working arrangements shall be adopted:—

(a) Rigid lines of demarcation between the duties of associated grades or individual members of the staff shall be removed to allow greater elasticity of working conditions.

(b) The practice of calling trainmen for rostered turns of duty shall be abolished, subject to the proviso that men whose rostered times of duty are changed after they have been booked off duty on the preceding turn, will be advised of the change. All restrictions as to place of residence which have hitherto existed shall be removed.

(c) The provisions already agreed between the Railway Executive and the N.U.R. with regard to the employment of vanguards in the London area shall become fully operative.

(d) Lodging turns of duty for trainmen shall be extended where economy will accrue. The minimum allowance to men lodging away from home on double home turns shall be increased from 6s. to 9s.

The court urges on the Railway Executive the extreme importance of continuing and extending the efforts it has been making to consult and co-operate as fully as possible with the unions at all levels and expresses satisfaction that in the opinion of representatives of all the unions the position in this respect had greatly improved since the Railway Executive took over. On the other hand, the court urges with equal force on the railway unions the extreme importance of co-operating and collaborating at all levels with the Railway Executive, not only for the purpose of upholding the interests of their members but also for securing greater efficiency and economy in the working of the railways. Unless agreements were honoured the whole idea of collective bargaining was rendered meaningless.

In considering the history and background of recent events the court has been impressed by the harm done to the peaceful and orderly development of collective bargaining and industrial relations in British Railways as a result of the lack of co-operation between the railway unions when putting forward their claims. This has led to confusion in the course of

negotiations and has been the direct cause of much needless friction in the relations between the unions and the Railway Executive; it has also created discontent and dissatisfaction amongst the rank and file of railway workers, and has rendered almost impossible the task of the Railway Executive of arranging conditions of remuneration and working which cover the whole of its staff.

Reactions to the Report

After consideration of the report by the executive committees of the N.U.R. and A.S.L.E. & F., both unions decided on February 14 to reject the recommendations of the court of inquiry, and the Minister of Labour was informed to that effect.

Considerable unrest was also caused among railwaymen throughout the country as a result of the findings. For example, the Glasgow & West of Scotland District Council of the A.S.L.E. & F. recommended a national strike to commence from midnight, March 3, and the Midland District Council of the Society threatened to call a 48-hour weekend protest strike.

The Railway Executive in a published statement said that careful consideration had been given to the recommendations and the Executive had decided to accept them as a whole. The trade unions had been advised accordingly.

The statement continued "The Executive accepts the recommendations in the belief that they represent a reasonable settlement, will give the railway staff concerned fair remuneration, and will enable more efficient and economical service to be given by the railways to the trading and travelling public. A request for a meeting has been received from one of the unions, and the Railway Executive has replied that it is ready to meet the three unions immediately."

The request for a meeting with the Railway Executive was made by the A.S.L.E. & F., but the N.U.R. was not prepared to consider such a course, insisting that any meeting should be with the Minister and not the Executive, because it was to the Minister that the court was required to make its report.

On February 16, Mr. Aneurin Bevan, Minister of Labour, had prolonged talks with both sides. After seeing the Chairman of the Railway Executive and the Member for Labour Relations he had four hours discussion with representatives of the three railway unions.

An official statement issued afterwards said: "In view of the fact that the report of the court of inquiry is not an award, and discussions will now take place between the unions and the railway executive, the Minister emphasizes to all the men concerned that no action should be taken in the meantime that might be prejudicial to these discussions." It is understood that Mr. Bevan pointed out to the representatives that the recommendations were not a final award, and, whatever the conclusions, discussions between the parties were still necessary and the responsibility for reaching a settlement rested on the Railway Executive and the unions.

After the meeting with Mr. Bevan, Mr. Figgins said: "On behalf of the N.U.R. executive, I conveyed to Mr. Bevan that the deep resentment which was felt originally at the new technique employed by the Railway Executive of imposing conditions of service on railwaymen before any wage and salary advances could be considered, had been greatly intensified by the recommendations of the court."

It was later announced that the meeting between representatives of the Railway Exe-

cutive and of the trade unions would take place on February 19.

Meanwhile, delegates of some 11,000 railwaymen in Manchester and district decided on February 17 to strike from midnight on Tuesday, February 20. This followed the decision of 3,500 goods men at Manchester and Salford to stop work at midnight on February 18. Some men at Liverpool and at one Sheffield depot have also started working to rule.

The R.C.A., after a meeting of its Executive Committee on February 18, announced that the findings were unsatisfactory, and its representatives were directed to take the matter up again with the Railway Executive.

Discussions between representatives of the Railway Executive and of the three trade unions continued throughout most of Monday. Talks were resumed on February 20. After a short meeting in the morning the discussions were adjourned. Talks continued in the afternoon.

A Revised Offer

An official statement issued after the meeting stated that a revised offer had been made by representatives of the Railway Executive to the trade unions. The representatives of the unions decided to consider this offer and to meet the Railway Executive again on February 21.

After the discussions on Monday the three unions met in the evening, and, after a meeting lasting rather more than two hours, agreed to give an undertaking to speed-up discussions on changes in working conditions through the appropriate machinery, provided that agreement was reached on their wage claims. They also agreed to consider any proposal that the Railway Executive might make on wages. The unions have also decided on a joint policy regarding the wages offer instead of each continuing their individual claims.

Meanwhile there is growing unrest among railwaymen throughout the country. The threat to cease work was implemented on February 19 by goods handling and cartage staffs at nine goods depots in Manchester, and approximately 3,000 men in Liverpool decided to work to rule. Staff were also working to rule at Birmingham, Wolverhampton, Sheffield, and Chesterfield, while goods and cartage men at Bishopsgate goods station decided to work to rule beginning at midnight on February 19.

On February 20, strike action or go-slow tactics were being pursued by approximately 11,500 staff in the commercial, operating, and motive power departments. The principal places affected were Manchester, Liverpool, Sheffield, Glasgow, Bristol, and Birmingham. London depots affected were Bishopsgate, Stratford, Royal Mint Street, Bricklayers' Arms, and Nine Elms. The go-slow policy includes a refusal to work overtime, Sunday duty or perform any higher grade duty. Some interference with traffic working has necessarily resulted from the men's unconstitutional action.

MODEL RAILWAY CLUB EXHIBITION.—The annual exhibition of the Model Railway Club will be held in the Central Hall, Westminster, London, S.W.1, from Tuesday, March 27, to Saturday, March 31. The number of models on show will exceed 3,000, and exhibits in the basement will include a large working model railway by British Railways and various other working track layouts of different gauges. The exhibition will be open from 2 p.m. to 9 p.m. on March 27, and from 11 a.m. to 9 p.m. on other days.

Questions in Parliament

Special Trains and the Coal Crisis

Lord Rochdale in the House of Lords on February 13 asked what was the policy of the B.T.C. in regard to special trains for social or sporting engagements during the coal crisis and whether that policy had the approval of H.M. Government.

Lord Lucas of Chilworth (Parliamentary Secretary to the Ministry of Transport): As one of the measures to meet the request to reduce coal consumption on the railways, the B.T.C. decided that, until the duration of the reduction is known, excursion trains will be run only in connection with events for which a large public travel demand exists or where definite commitments to organisers have been undertaken. Other special excursion trains have been withdrawn.

Delays to Coal Traffic

Mr. J. M. C. Higgs (Bromsgrove—C.) on February 12 asked the Minister of Fuel & Power, to what extent the distribution of coal supplies was being retarded by delays on the railways.

Mr. Alfred Robens (Parliamentary Secretary to the Ministry of Fuel & Power): There was some congestion on the railways early this year, due at first to bad weather and later to heavy sickness among railwaymen. As a result of measures adopted by the Railway Executive, movement of coal has improved.

Mr. Higgs: Is the Minister aware that cases have been reported of coal trucks standing in sidings for four or five days almost within reach of people crying out for coal?

Mr. Robens: That may well be, but there would be a very good reason for those trucks remaining in the sidings.

Iron and Steel Prices

Mr. Maurice Edelman (North Coventry—Lab.) on February 12 asked the Minister of Supply what would be the effect on the price of iron and steel of the recent rise which had taken place in the price of coal and coke.

Mr. George Strauss in a written answer stated: It will be necessary to increase iron and steel prices, and an order will be made as soon as possible.

Employment among Railwaymen

Mr. A. A. H. Marlowe (Hove—C.) on February 13 asked the Minister of Labour what information he had been able to obtain from the regional and local offices of his Department on the future trend of employment among railwaymen as a result of the cuts in train services; and what steps he was taking to provide other employment for them.

Mr. Frederick Lee (Parliamentary Secretary to the Ministry of Labour): I have had no information from the regional and local offices reporting an unfavourable trend of employment among railwaymen.

Mr. Marlowe: Has the Parliamentary Secretary seen the report that the train services are being cut and has he called for any information from the branch offices with regard to this? Second, will he tell the House whether he agrees with the estimate of Mr. R. W. Mackay (North Reading—Lab.) that there are already approximately 90,000 men redundant on British Railways?

Mr. Lee: I would rather take the word of the Railway Executive on the question of those people who are redundant.

Mr. Cecil Poole (Perry Bar, Birmingham—Lab.): Does the Minister agree that this

is a matter which can well be taken care of by the trade unions catering for the industry, and would it not be well to leave it to them?

Mr. Lee: Yes, I think it is a question to be decided between the trade unions and the industry.

Brigadier O. L. Prior-Palmer (Worthing—C.): Is the Minister aware that recently 30 men were stood off at Lancing railway works and that another 16 followed?

The Speaker intervened and said that Brigadier Prior-Palmer was giving information rather than asking for it.

Railway Costs and Price of Coal

Mr. Henderson Stewart (East Fife—Nat. Lib.-Con.) on February 13 asked the Minister of Fuel & Power, following on the increased price of coal at the pithead, what would be the additional cost of coal delivered to the average householder of railway carriage per ton-mile; of electricity and gas to the average householder; of electricity and gas to the average industrial user; and of coal exported abroad.

Mr. Philip Noel-Baker stated in a written answer: Consumers in the southern regions who obtain the maximum permitted quantity of house coal (34 cwt.) will pay an additional 7s. 1d. a year, and in the remainder of the country, where the maximum permitted quantity is 50 cwt., the corresponding additional cost will be 10s. 5d. a year.

The increase in the price of coal at the pithead will inevitably result in increased railway and public utility costs, but I am not in a position to forecast the effect on railway freight charges or electricity and gas tariffs, which are affected by many other factors. The prices of coal for export are fixed by the National Coal Board, but I understand that they are not to be increased at present.

Railways and Potato Traffic

Mr. C. N. Thornton-Kemsley (North Angus and Mearns—Nat.-Lib. Con.) on February 6 asked the Minister of Food whether he was aware that the growers of seed potatoes in the north-east of Scotland were finding that the railways would not accept consignments of potatoes owing to shortage of sheets; and, having regard to the serious risk of deterioration in stocks held up outside stations, whether he would make urgent representations to the Railway Executive.

Mr. F. T. Willey (Parliamentary Secretary to the Ministry of Food) in a written answer stated: We maintain close touch with the Railway Executive and have discussed these reports with them. They are giving special attention to this traffic, and, provided growers give reasonable notice, their requirements for wagons and sheets will be met.

Contracts & Tenders

The Egyptian Government has recently placed a contract with Société Anonyme Baume & Mercier (London Agents: Brandhurst Co. Ltd., Vintry House, Queen Street Place, E.C.4), for 200 40-ton box cars.

An order for the Nigerian Railway has recently been placed with Sentinel (Shrewsbury) Limited by the Crown Agents for the Colonies, for two triple-unit steam railcars. The sets will comprise two articulated coaches and a trailer coach, and the coach bodywork, underframes and trailer coaches will be built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd.

Notes and News

Railway Trained Engineer Required.—A railway trained engineer, about 30 years of age, is required by an oil company. See Official Notices on page 227.

Scottish Seed Potato Traffic.—In the period November to January 14 the Eastern Region of British Railways handled no less than 142,788 wagon loads of Scottish seed potatoes conveyed into East Anglia by rail for early sowing.

Assistant Establishment Officer Required.—An assistant establishment officer, not over 35 years of age, is required by the Government of Nigeria for the railway department for one tour of 18 to 24 months with prospect of permanency. See Official Notices on page 227.

Prizes for L.M.R. Students.—Prizes were presented on February 14 to 19 railwaymen out of 3,150 who took London Midland free courses in railway commercial subjects last winter and succeeded in obtaining over 90 per cent. of marks in the final examinations. The winners came to London from all parts of the Region to meet Mr. A. E. Hammett, Commercial Superintendent, who presented the certificates and prizes.

Indian State Railways Dinner and Ladies' Tea.—The annual Indian State Railways Dinner will be held as usual on the Monday in Derby week, May 28, at the Rembrandt Hotel, Thurloe Place, S.W.7, at 7 p.m. It will be preceded there by a Ladies' Tea from 4 to 6 p.m. Full details will be announced later, but officers are requested to note the date, and keep it free to attend these reunions.

Trent Motor Traction.—The net profit of the Trent Motor Traction Co. Ltd., for 1950 amounted to £89,824—after providing £73,828 for depreciation—and £24,430 for tax. This company with a net profit of £121,383 last year when £67,617 went in depreciation and £74,342 in taxes. The directors propose a final dividend of 10 per cent., making 20 per cent. for the year as before, plus a bonus of 7½ per cent., leaving £101,093 to be carried forward.

Eastern Region Sugar Beet Traffic.—In three weeks to January 21 the Eastern Region of British Railways carried an additional 20,140 tons of sugar from sugar beet factories in East Anglia compared with the equivalent period last year. Sugar beet carried to the factories also increased by 30,780 tons and wet sugar beet pulp by 5,840 tons. Dry sugar beet pulp, which is in great demand for stock feeding, increased by 3,690 tons. These increases were due to a heavier sugar beet crop extending over a longer season and higher sugar content in the beet. During the season no less than 86,562 wagon loads of sugar beet traffic had been moved and 7,696 wagons of raw sugar in bulk.

Electric Railway Society.—A talk entitled "A Glance at American Electrics" was given by Mr. Howard Linecar to the Electric Railway Society on January 6. Mr. Linecar first referred to the present popularity of the diesel-electric locomotive in the United States. Turning to straight electrification, he mentioned that electrified route-mileage in that country amounted to only 3,091, and gave a survey of the electrified lines and the systems in use. The most popular system was the 11,000 V. a.c. overhead, followed by 600-650 V. d.c. third rail, the latter used chiefly on sub-

urban lines. These electrifications were carried out between 1895 and 1939 and were unlikely to be extended now that diesel traction had taken such a firm hold. Then followed a more detailed account of the electrification of the Pennsylvania Railroad, which has an electrified route-mileage of 741. After mentioning that all trains into New York were worked by electricity, which had a very beneficial effect on the smoke problem in that city, the author described the locomotives in use on the Pennsylvania line, with special reference to the "GG-1" engines.

Route Check on London Transport.—The London Transport Executive has completed a three-day test to ascertain the exact routes taken by travellers on the underground. Additional ticket examiners were posted at nineteen stations (Baker Street, Bank, Charing Cross, Ears Court, Elephant & Castle, Euston Square, Hammersmith [Metropolitan], Holborn, Kings Cross, Leicester Square, Liverpool Street, Monument, Moorgate, Notting Hill Gate [Metropolitan], Oxford Circus, Paddington [Bakerloo], Piccadilly Circus, South Kensington, and Tottenham Court Road) and tickets were also checked in 39 interchange passages. A different ticket punch was used at each station. The results of the check are expected to yield information urgently needed about travel trends.

Higher Road Charges Opposed.—A resolution deprecating "the arbitrary manner" in which the Road Haulage Executive recently announced a further increase of 10 per cent, in charges has been passed by the Association of British Chambers of Commerce. The resolution, which has been sent to the Road Haulage Executive

and the Central Transport Consultative Committee, asks for an unqualified assurance that joint consultation between transport undertakings and traders has not been abandoned, and that in future trade and industry will be called into consultation on all such important matters as increased charges, changes in conditions of carriage, and other major policy decisions which have such far-reaching effects.

Institution of Civil Engineers.—At a meeting of the Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1, to be held at 5.30 p.m. on March 6, Mr. E. C. Cookson will read a paper on "Methods of Effecting Economy in Track Maintenance & Renewal."

Passport-Free Excursions Not to be Resumed.—Further to the paragraph on page 110 of our January 26 issue, it is announced by the Home Office that "no-passport" one-day excursions to the Continent cannot be resumed this year. Uncontrolled journeys between the British and French Channel ports, it is added, would endanger regulations covering exchange control, import duties, and purchase tax.

European Railway Tariffs Proposal.—A system of international tariffs for European railways was recommended by a working party set up by the economic commission for Europe, in which delegates of 13 European countries took part, with representatives of the International Union of Railways and the International Chamber of Commerce. The Danish delegations announced that Sweden, Norway, and Denmark had established an international tariff among themselves in place of the tariffs in force, and that it would come into

operation in a few months' time. The International Union of Railways is preparing two revised draft model tariffs, the one to serve as a basis for international through-traffic, the other as a model for railways when revising their internal tariffs. It was agreed that it would be of considerable value to the development of international trade if Europe as a whole were treated as a single country for railway tariff purposes, with conditions and charges independent of internal tariffs.

Increase in Iron and Steel Prices.—Increases in the maximum prices of iron and steel came into operation on February 21. The new prices are mainly a result of the recent increase in the price of coal and coke. They are included in an order (Iron & Steel Prices Order, 1951, S.I. No. 252), made by Mr. G. R. Strauss, Minister of Supply, which also consolidates previous iron and steel prices orders, and provides for certain minor changes.

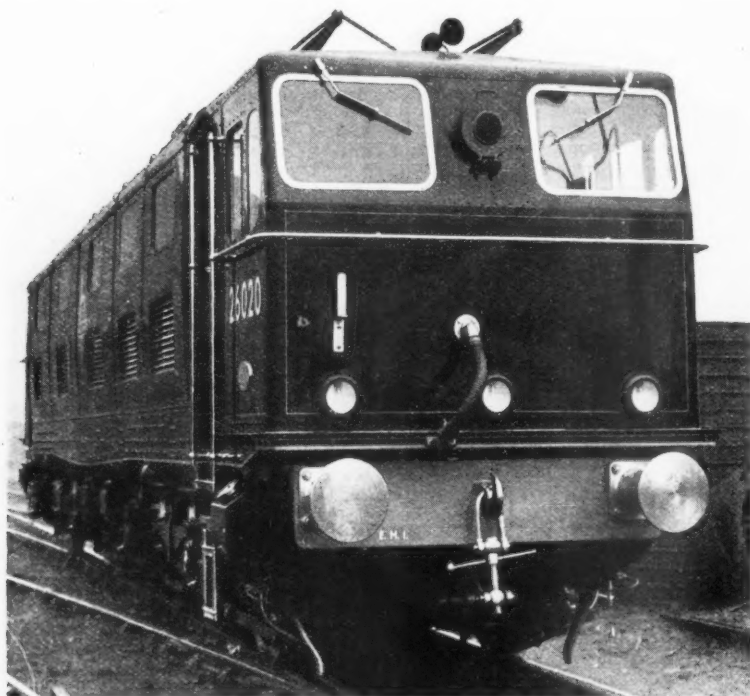
Institute of Transport, Northern Ireland Section, Meeting.—The monthly meeting of the Northern Ireland section of the Institute of Transport was held in the U.T.A. Headquarters, 21, Lineahall Street, Belfast, on February 15, the Chairman, Mr. James A. Clarke, presiding. Mr. J. H. Brebner, Chief Public Relations & Publicity Officer, British Transport Commission, who was to have read a paper on "Public Relations" was unable to be present. Instead, Major G. S. Madden, Assistant Passenger Manager, Ulster Transport Authority, read a paper on "Training and Administration."

West Highland Train Snowed Up.—The 3.46 p.m. train from Glasgow to Fort William on February 17 was stranded for more than 30 hr. near Corroir, on Rannoch Moor, by a blizzard. The engine and one coach were derailed by the snow. The 23 passengers were marooned throughout the night and all the next day. Food for them and the train crew was supplied from the dining car. A special relief train which set out from Glasgow on February 18 became stuck in a deep drift when about 1½ miles south of the stranded train, which was reached by a locomotive and snowplough from Fort William.

Steel Interim Plan Hitch.—The Iron & Steel Corporation of Great Britain announced on February 16 that it had been unable to reach agreement with the British Iron & Steel Federation on arrangements covering the next three months of the interim period during which a long-term organisation will be set up for the British steel industry. One of the main points at issue is understood to have been the extent to which the Corporation should be represented on the main committees of the Federation and the amount of authority which the Corporation should wield in respect of the decisions and recommendations of these committees.

Mishap to Lagan Bridge.—In the early hours of Saturday, February 10, a laden barge being towed up the River Lagan at Belfast struck two cast-iron octagonal columns of the viaduct which carries the Belfast Central Railway over the Lagan and the Laganbank Road, knocking out a large piece of one column and badly cracking another. The mishap stopped the exchange services on the G.N.R. between the Antrim and County Down sides of the Lagan until the next Wednesday, when loaded wagons were allowed to cross, but not engines. The wagons are being pushed out over the viaduct, and then hauled by an engine waiting at the other side. Normal working was expected next week. The

Electric Locomotive for Festival of Britain



British Railways electric locomotive, No. 26020, which is to be used on the Manchester-Sheffield-Wath line, after being shown at the Festival of Britain

IMPORTANT OIL COMPANY: require Railway trained engineer as representative. Experience with diesel engines an asset but not essential. Age about thirty. Reply giving age, experience, etc., to Box 990, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hull (late District Engineer, L.M.S.R.). Valuable information. With much sound advice on the upkeep of permanent way. Cloth, 81 in. by 51 in. 82 pp. Diagrams. 5s. By post 5s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Berkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Method. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railways. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

Crown Agents for the Colonies

ASSISTANT ESTABLISHMENT OFFICER required by the Government of Nigeria for the Railway Department for one tour of 18-24 months with prospect of permanency. Salary according to qualifications and experience in scale £711 rising to £1,042 a year including allowances. Outfit allowance £60. Free passages for the officer and his wife and assistance towards cost of children's passages. Liberal leave on full salary. Candidates not over 35 must be educated to matriculation standard and have had experience in dealing with staff work in a large undertaking. Preference will be given to candidates who have followed a course of study on personnel management or secretariat practice. Apply at once by letter, stating age, full names in block letters and full particulars of qualifications and experience and mentioning this paper to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M.28442.C on both letter and envelope. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

WE buy used or unserviceable Steel Files at good prices, in lots of 2 cwt. or more. THOS. W. WARD, LIMITED, R.S. Department, Albion Works, Sheffield.

DIRECTORY OF RAILWAY OFFICIALS & YEAR BOOK. A useful reference book for railway officers, engineering firms, and all who do business with railways. The only Directory which enables one to find the right railway and the right officer at the right moment. Issued July each year. Price 30s. net. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

traffic mainly affected was coal, oil and petrol. Repairs to the columns were effected by first sheeting them with timber and filling with concrete. Steel straps $\frac{1}{2}$ in. thick were then placed around each column at intervals, two upright steel bars fixed on every face, and the whole was sprayed with Gunitite.

Vickers Limited: Dividends.—At a meeting of the board of Vickers Limited on February 15 final dividends in respect of 1950 were declared as follows:—2½ per cent., actual, less income tax, on the preferred 5 per cent. stock; 2½ per cent., actual, less income tax, on the 5 per cent. preference stock; and £2 2s. 6d. net per £100 stock on the cumulative preference stock.

Westinghouse Profits and Dividends.—A dividend of 14 per cent. is recommended by the directors of Westinghouse Brake & Signal Co. Ltd. in respect of the year ended September 30 last. Similar distributions have been made for some years. Consolidated trading profits are slightly lower at £482,881, against £491,213, but the figure is struck after providing £43,182 more for depreciation.

Passengers Trapped on Aerial Railway.—Twenty passengers were trapped on February 20, more than 400 ft. high in the air, in a cable car of the aerial railway running up to the 1,200 ft. Sugar Loaf Mountain at the entrance to Rio de Janeiro Bay. A cable broke when the car was nearing the 500 ft. Urea Hill early in the afternoon. First attempts to pull the car failed. Efforts to remove the passengers by rope were hampered by low clouds which obscured the car.

Education Scheme for Port Workers.—A scheme to give port workers a greater understanding of their work has resulted from a conference of interested parties, including the Railway Executive and the Docks & Inland Waterways Executive, the Institute of Transport, the Dock Labour Board, and various educational bodies, which met during the past year and have now issued a report. They suggest that there is a need for elementary courses of study directly connected with port work which would meet the educational requirements of employees who do not take advantage of existing facilities. The subjects of the courses are port traffic, working, and organisation and finance, and adjustment in the syllabuses is made to suit local conditions. The Institute of Transport will be responsible for the approval of syllabuses and maintenance of standards of the examinations at the con-

clusion of courses. Certificates will be issued by the Institute to successful candidates. Details may be obtained from the Institute of Transport, 80, Portland Place, London, W.1.

Southern Region Services Affected by Floods.—During the afternoon of February 20, Southern Region electric services to Hayes, Addiscombe and Sanderstead were reversed at Clock House, where water covered the line. Flood water at Mitcham necessitated suspension of services between Wimbledon and Mitcham Junction.

G.W.R. (London) Operatic Society in "The Quaker Girl."—The G.W.R. (London) Operatic Society will present the musical play "The Quaker Girl" at the Scala Theatre, Charlotte Street, W.1, at 7 p.m., on Wednesday, February 28, and Thursday, Friday, and Saturday, March 1-3. The members of the Society are drawn from the clerical staff of British Railways (Western Region) at Paddington.

Passenger Train Punctuality in Scotland.—Although passenger train schedules were upset considerably by snowstorms, floods, fog, and bad weather, an analysis of the time-keeping of local services in the Scottish Region throughout the four weeks ended January 27 shows that of the total of over 50,000 trains run 72.2 per cent. reached their destination on time. Fourteen per cent. of the passenger services were five minutes late or less and 13.8 per cent. were over five minutes late. The average late arrival figure for the four weeks is 2.94 min. These results, in view of the adverse weather conditions experienced, reflect great credit on the traffic operation staff of the Scottish Region.

Mont Blanc Road Tunnel.—Plans for the construction of the road tunnel through Mont Blanc, are stated by the Paris journal *Le Monde* to have been placed on the agenda of the recent meeting of the French and Italian Premiers and Foreign Ministers at Santa-Margherita. It is reported that as a result of the Franco-Italian Conference agreement may be reached for the formation of a Mont Blanc International Tunnel Company with offices at Geneva, ready to begin work in June this year. This company would have to be international in character like the Suez Canal Company, with France, Italy, and Switzerland each holding one-third of the shares. The capital required is put at 80,000,000 Swiss francs to be raised by subsidies from France and Italy of fr. 20,000,000 each. The remaining 40,000,000 would be covered by private capital and amounts subscribed by Geneva and other Swiss cantons likely

to benefit by increased tourist traffic. The concession would last 70 years, after which the tunnel would become the property of France and Italy.

Brookhirst Switchgear Limited: Branch Office.—Brookhirst Switchgear Limited, Chester, recently has opened a new branch office at Lloyds Bank Chambers, 15, Sandhill, Quayside, Newcastle-on-Tyne, and Mr. T. G. Evans has been appointed District Manager.

Station Lighting at Kyle of Lochalsh.—The acetylene gas lighting in the station offices and platforms at Kyle of Lochalsh recently has been replaced by electric lighting. British Railways, Scottish Region, announces that work is now going ahead in equipping the motive power yard at the station in the same way.

Eastern Region Amateur Boxing.—The annual boxing championships of the Eastern Region of British Railways took place at Doncaster on February 2. Mr. J. F. Harrison, Mechanical Electrical Engineer, presented plaques to the winners and runners-up in the contests. Open junior competitions were also held for youths under 17 years of age. The inter-Regional quarter-finals will take place at Liverpool and York on March 7 and 9 and the semi-finals and finals at the Royal Albert Hall on April 24.

International Bureau of Technical Railway Information.—The International Union of Railways is to establish a centre of technical railway information (Bureau International de Documentation) at 27, Rue de Londres, Paris. Before the war, the French National Railways had formed a centre of technical information, which in the last ten years has greatly developed its work and publishes a monthly information bulletin. A committee of the I.U.R. has also developed exchange of information between countries. The S.N.C.F. temporarily placed its centre of technical information at the disposal of the I.U.R. and a special issue of the S.N.C.F. *Bulletin de Documentation Technique* was supplied to foreign railway administrations. To cope with these developments, a new organisation was set up early in 1950. Various European railways forwarded information for supplementary chapters in the *Bulletin*, while the S.N.C.F. and B.T.C. Railway Research Service continued to deal with technical questions; the first number of a considerably enlarged bulletin was published in April, 1950, and the success of this bulletin led to the foundation of the Bureau International de Documentation. The S.N.C.F. placed at

the disposal of the new bureau its special-ists, premises, railway publications, and photographic material and facilities.

European Transport Plan.—A plan to make travel and goods transport throughout Europe quicker, smoother, cheaper, and easier, has been approved by the Transport Committee of the Council of Europe. The European Assembly in its last session at Strasbourg in November recommended the Committee to consider ways and means of rationalising European transport. To begin the discussion Monsieur Bonnefous (France) tabled ideas for setting up an international authority on the lines of the Schuman Plan to co-ordinate the road, rail, water and air communications of the countries of Western Europe. Representatives from Britain, Sweden, Germany, Belgium, Greece and Italy attended. The plan will be presented next May for approval to the Consultative Assembly of the Council.

Forthcoming Meetings

- February 23 (Fri.).—Society of Engineers, at 17, Victoria Street, London, S.W.1, at 6.30 p.m. "Some Notes on Bridge Construction," by Mr. J. N. Walker.
- February 24 (Sat.).—Permanent Way Institution, London Section, at 296, Vauxhall Bridge Road, S.W.1, at 2.30 p.m. "The Netherlands: Characteristics, Railways and some big Civil Engineering Works," by Mr. B. Van Bilderbeek, Engineering Assistant, Netherlands Railways.
- February 27 (Tue.).—Institute of Transport, informal luncheon, at the Connaught Rooms, Great Queen Street, London, W.C.2, at 12.30 for 1 p.m. Speaker: Sir Harold Scott, Commissioner of the Metropolitan Police.
- February 28 (Wed.).—Railway Students' Association, London School of Economics and Political Science, Houghton Street, Aldwych, W.C.2, at 6 p.m. Exhibition of Canadian films, arranged by the Canadian National Railways.
- February 28 (Wed.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London Bridge, S.E.1, at 5.45 p.m. "The Agent's Part in Travel Promotion," by Mr. F. G. Dawson, Overseas Manager, the Workers Travel Association Limited.
- February 28 (Wed.).—Royal Society of Arts, John Adam Street, Adelphi, London, W.C.2, at 2.30 p.m. "1851-1951: A Century of British Engineering," by Mr. W. T. O'Dea and Mr. J. Greig.
- March 1 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, at the headquarters staff dining club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. "Notes on a Visit to the U.S.A.," by Mr. S. G. Hearn, Assistant Operating Superintendent, Western Region.
- March 2 (Fri.).—Scottish Society of Students of the Locomotive, in the Board Room, 302, Buchanan Street, Glasgow, C.2, at 7.30 p.m. "Steels for Locomotive Construction," by Mr. Ian M. MacKenzie.
- Until March 22 (Thu.).—Royal Institute of British Architects, 66, Portland Place, London, W.1. "Architecture of Transport Exhibition," open 10 a.m. to 7 p.m. weekdays, 10 a.m. to 5 p.m. Saturdays.

Railway Stock Market

There has been a rush of business in stock markets due mainly to the selling of nationalisation steel stock and reinvestment in higher-yielding securities. Industrial shares have been generally favoured, but biggest gains have been recorded in rubber shares, which were in good demand mainly because of expectations that pending dividends will show substantial increases. The new steel stock started its market life at £2 discount, to the issue price of £100, but at the time of writing the discount has been reduced to 35s. All the same the steel discount has led to a downward adjustment of prices of other gilt-edged stocks. There is little doubt that it is well within the capacity of the gilt-edged market to absorb the £213,000,000 of steel stock and the discount for the new stock does not in any way indicate lack of confidence in the gilt-edged outlook. Steel stock is merely following the pattern of other nationalisation stocks.

The market is also talking of a possible issue of £100,000,000 of additional British Transport stock. This is unlikely until later in the year, however, and would probably be left until after the Budget. Higher taxation and Budget fears are beginning to affect market sentiment, though there is confidence that markets generally will remain active over the next few weeks, owing to selling of steel stock. Meanwhile, however, more attention is being given to mining shares, and shares of other companies registered abroad.

Partly because current prices are in many cases below estimated pay-out levels, foreign rail stocks have been rather more active, though generally movements have been small on balance. Leopoldina strengthened to 11½ and the preference stock to 28½, but on the other hand, the 4 per cent. and 6½ per cent. debentures eased to 99 and 147. Leopoldina Terminal 5 per cent. debentures were 94 and the ordinary units 1s. 3d.

Although rather more active, movements in Antofagasta preference stock were small, business being around 53; the ordinary eased to 7½. Nitrate Rails were quoted at 22s. 6d. "ex" the return of capital and Taltal strengthened to 18s. 3d. Great Western of Brazil firmed up to 157s. 6d. and San Paulo 10s. units were steady at 16s. 4½d. Brazil Rail gold bonds were

43½. Manila "A" bonds were 62½ and the preference units 6s. 6d. Mexican rails turned easier with Mexican Central "A" bonds at 60 and National of Mexico 4½ per cent. non-assented were 41½. La Guaira kept at 83 and Bolivar "C" debentures were 57. Guayaquil & Quito 5 per cent. bonds marked 31 and International of Central America no par value stock changed hands at 18½. Central Uruguay ordinary stock was dealt in up to 8½. Canadian Pacific have been active again, but at 53 have not held best levels, profit taking developing, although the market continued to talk of higher dividend prospects, Canadian Pacific preference stock was 77½ and the 4 per cent. debentures 100½.

Elsewhere B.E.T. deferred stock was firm at £525, and shares of road transport companies generally were maintained quite well though quotations were tested by few dealings. Southdown were 105½, West Riding 53s., and Lancashire Transport 61s. 3d.

Exchanging out of steel stock has brought a good demand for engineering and allied shares, but earlier gains were not fully held. Guest Keen were 53s. 4½d. The market is talking of a higher dividend from Guest Keen unless it is the intention to make a return of capital from compensation received for the steel interests of the group. Vickers and Cammell Laird have both remained active on higher dividend hopes and the possibility of special distributions of some kind arising from compensation for the English Steel Corporation. Clarke Chapman reflected profit taking and came back to 61s. 6d. despite the increased dividend. B.S.A., after changing hands around 40s., eased to 39s. 3d. Powell Duffryn have been active around 34s. and Staveley were better at 89s. 1½d. on hopes that arbitration on compensation will bring a favourable result.

Shares of locomotive builders and engineers have lost a little ground. Sentiment was affected to some extent by reports that British Railways are planning to build all their own locomotives in due course. At the time of writing Vulcan Foundry have eased to 24s. 9d., Beyer Peacock to 25s. 9d., and North British Locomotive to 23s. Gloucester Wagon, however, strengthened to 17s. Wagon Repairs were 15s. 9d., Birmingham Wagon were 35s. 1½d., and Hurst Nelson 63s.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date	
				Total this year	Inc. or dec. compared with 1948/49		Total	Increase or decrease
							1949/50	
South & Central America	Antofagasta ..	811	11.2.51	£ 80,170	+ £ 15,490	6	£ 583,550	+ £ 173,390
	Costa Rica ..	281	Dec., 1950	c883,460	+ c525,677	26	c6,180,729	+ c1,024,867
	Dorada ...	70	Nov., 1950	36,972	+ 13,063	48	428,205	+ 107,418
	Inter. Ctd. Amer. ...	794	Dec., 1950	\$1,205,497	+ \$54,553	52	\$13,466,226	+ \$1,071,160
	La Guaira ...	223	Sept., 1950	\$68,726	+ \$39,529	39	\$725,535	+ \$241,943
	Nitrate ..	382	15.8.50	10,816	+ 9,656	32	286,336	+ 6,203
	Paraguay Cent. ...	274	9.2.51	\$201,772	+ \$71,777	32	\$76,495,598	+ 71,948,810
	Peru Corp. ...	1,050	Jan., 1951	\$8,019,000	+ \$1,564,300	31	\$54,149,000	+ \$13,898,342
	" (Bolivian Section)	66	Jan., 1951	\$s.14,487,000	+ \$s.4,964,000	31	\$s.84,401,000	+ \$s.12,008,836
	Salvador ...	100	Dec., 1950	c246,000	+ c32,000	26	c769,000	+ c39,000
Taltal ..	154	Jan., 1951	\$1,605,891	+ \$141,383	31	\$10,862,693	+ \$1,725,484	
Canada	Canadian National	23,473	Nov., 1950	17,632,000	+ 2,779,000	48	167,883,000	+ 16,065,000
	Canadian Pacific...	17,037	Dec., 1950	11,274,000	+ 1,235,000	52	126,192,000	+ 5,108,000
Various	Barsi Light* ...	167	Dec., 1950	25,137	+ 2,955	39	257,055	+ 9,900
	Egyptian Delta ...	607	10.10.50	18,245	+ 1,296	28	319,911	+ 24,005
	Gold Coast ...	536	Dec., 1950	304,770	+ 18,020	40	2,263,935	+ 83,014
	Mid.ofW.Australia	277	Nov., 1950	40,070	+ 10,472	22	193,383	+ 51,544
	Nigeria ...	1,900	Jan., 1950	502,360	+ 38,978	44	5,017,814	+ 266,573
	South Africa ...	13,347	27.1.51	1,840,035	+ 324,298	42	73,410,130	+ 9,616,586
	Victoria ...	4,744	Sept., 1950	1,729,344	+ 103,977	13	—	—

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1